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The BULLETIN

American Society of
Hospital Pharmacists



PUBLIC HEALTH SERVICE PLANS

For pharmacies in 50, 100, and 200 bed hospitals

PHARMACISTS' RELATIONS

Two articles on human and professional relations

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VOLUME 7

NUMBER 3

MAY-JUNE 1950

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The BULLETIN

MAY-JUNE 1950
VOLUME 7 NUMBER 3

American Society of Hospital Pharmacists

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MEMBERSHIP in the American Society of Hospital Pharmacists and the American Pharmaceutical Association is open to all practicing Hospital Pharmacists. With membership is included subscriptions to THE BULLETIN of the American Society of Hospital Pharmacists and to the two Journals of the American Pharmaceutical Association, as well as the several services of both organizations.

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Hospital Formularies

DEAR SIR: I understand that copies of hospital formularies are available from the library of the American Pharmaceutical Association. I am particularly interested in formularies being used in the smaller institutions. Any information you can give me will be greatly appreciated.

AMY K. ADAMS

*Community General Hospital
Reading, Pa.*

Editor's Note: Hospital pharmacists will be interested to note that a number of the more recently published hospital formularies are available on loan from the library at the headquarters of the American Pharmaceutical Association. Some of the formularies available include the following: *Indiana University Medical Center Hospital Formulary*, Indianapolis, Ind., 1947; *Handbook and Formulary of the University Hospitals*, State University of Iowa, Second Edition, Iowa City, 1946; *Formulary of the University Hospital*, Ann Arbor, Mich., Second Edition, 1947; *Formulary and Handbook of the Johns Hopkins Hospital*, Baltimore, 1942; *The Duke Hospital Formulary*, Durham, N.C., 1949; *Formulary of Beth Israel Hospital*, New York City, 1950; *Evangelical Deaconess Hospital Formulary*, Detroit, Mich., 1949; *Formulary of the New York University Clinic*, New York University Medical Group, New York City, 1949; *Lynn Hospital Formulary*, Lynn, Mass., Second Edition, 1949; *Baltimore City Hospitals Formulary*, Baltimore, 1950.

Appreciation

SIR: Attached is a copy of a letter to an applicant whom you suggested that we contact concerning the position of hospital pharmacist. We very much appreciate your assistance and wish to inform you that the position has been filled.

If the notice has been inserted in THE BULLETIN, we would like to review the applications in the event of future vacancies.

Thank you again for your help.

JAMES V. CAMPBELL, *Personnel Director
Bureau of Health and Hospitals
Denver 4, Colo.*

Floor Plans for Hospital Pharmacies

SIR: In accordance with your request, we are pleased to submit for publication in the May-June issue of THE BULLETIN OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, the following:

A photograph of each of the finished plans of the Pharmacy (revised) for 50, 100 and 200 bed general hospitals, "Elements of the General Hospital." Also an accompanying text entitled "Hospital Pharmacies."

Needless to say, we are very pleased that the plans meet with the joint approval of the Division of Hospital Pharmacy, American Pharmaceutical Association, and the American Society of Hospital Pharmacists.

It was a pleasure collaborating with both professional pharmacy associations, and to have you visit the Division of Hospital Facilities and meet our personnel.

GUY H. TRIMBLE, *Chief*

*Equipment and Supply Section
Division of Hospital Facilities*

Plaudits

SIR: As I am one of the original members of the American Society of Hospital Pharmacists, I would like to offer my congratulations for the fine progress which has been made, and may we have many more of the fine BULLETINS such as the January-February issue.

HUNTER L. KELLY, *Pharmacist*

*Watts Hospital
Durham, N. C.*

Progress in Hospital Pharmacy

SIR: It is very gratifying to note the wonderful progress the A.S.H.P. and A.Ph.A. are making. Our new BULLETIN has been generously complimented by pharmacists and non-pharmacists.

ARMAND J. DELLANDE, *Pharmacist
City Infirmary Hospital
St. Louis, Missouri*

Pharmacist in 105 Bed Hospital

DEAR SIR: Your advice is requested as to whether or not a one hundred and five bed hospital should have or rather could advantageously utilize the services of a full-time registered hospital pharmacist.

We would be interested in learning in complete detail the resulting service to the patient, which would result from acquiring such technical service in a hospital of this size.

Thank you for whatever assistance you can render us.

WALTER T. ALTMANN, *Administrator
Kennestone Hospital
Marietta, Ga.*



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Public Health Service Floor Plans for Pharmacies

By Don E. Francke

A fundamental contribution

A fundamental contribution to the advancement of hospital pharmacy and better pharmaceutical service to the patient has been made by the United States Public Health Service through its development of floor plans for pharmacies in 50, 100, and 200 bed hospitals. We take pride in presenting these plans on page 122 of this issue. Prepared by the Division of Hospital Facilities of the Public Health Service, these plans have been studied and approved by the Division of Hospital Pharmacy of the American Pharmaceutical Association and the American Society of Hospital Pharmacists. Thus, in a measure, they represent a cooperative project and we say this not for the purpose of minimizing or attempting to share the credit due to the Public Health Service, but, rather to indicate and to emphasize the cooperative manner in which they were developed. Thus, the final plans represent the composite thinking not only of specialists in the Public Health Service but also of those in hospital pharmacy and in hospital administration. This objective and cooperative approach has resulted in the consideration of the views and judgment of all concerned with the final utilization of these plans.

The patient benefits

In the final analysis, a well designed, functionally arranged, adequately equipped and properly staffed hospital pharmacy department means one thing: greater quality and quantity of pharmaceutical service to the patient. When any of these elements are missing it is the public, the patient, who suffers. Thus, it is the patient who is the final benefactor when any step is taken to improve pharmaceutical service in hospitals.

A full realization of the impact these plans will have on hospital pharmacy may be noted by looking back a few years at the manner in which plans for hospital pharmacies were developed. In reality, few hospital pharmacies were planned before the hospital was built; or if any planning was done, a small room in an out-of-the-way place was allotted as a "drug room." Into this cramped area was shoved all the equipment, stocks of drugs and other items which afterthought showed to be necessary. With a few notable exceptions, the pharmacy was poorly designed, allotted inadequate space, unfortunately located and ill-equipped. This has had many undesirable re-

sults. It has stifled the development of hospital pharmacy and limited its expansion, discouraging the initiative and progressiveness of those practicing in this specialty.

Because of poor working conditions and the general atmosphere which discouraged incentive, it has made many hospitals undesirable places in which to work. Economic waste to the hospital and the loss of countless man-hours have resulted. To attempt to assign responsibility for this poor planning is an unproductive pastime. Many like to blame hospital architects or administrators, but honest reflection will show that we as hospital pharmacists must bear the major burden of responsibility because it was we who, in the by-gone years, failed; first, to know our own needs, and second, to make these needs known to others. Fortunately, these days are behind us. We are now organized into a professional group which can anticipate and solve problems of this nature.

Better planned pharmacies

We can now look to the immediate future with the assurance that pharmacies in hospitals now undergoing construction will bear little resemblance to the general pattern of those designed in the past. There is now little excuse for poorly planned pharmacies in hospitals with 50, 100, or 200 beds. Each individual with any responsibility for the establishment of a Pharmacy Department should read and thoroughly digest the article in this issue which discusses the several aspects of hospital pharmacy planning. With such fundamental information well in mind he will be in a position to contribute greatly to and participate more fully in the basic and long-range planning of a hospital pharmacy. However, one of the greatest advantages of these plans and the thorough discussion which accompanies them is that they provide a basis on which those now in poorly planned departments may begin to survey their own situation and then to present concrete proposals which will allow them to give an increased quantity and quality of pharmaceutical service to the patient.

These plans are presented as a guide to be used in designing hospital pharmacies. In many instances they may be used as presented; in others, the elements of the plans may require rearrangement to accommodate special situations. But the elements have been well thought out and none should be eliminated.

Suggested Plans for HOSPITAL PHARMACIES

50, 100 and 200 Bed General Hospitals

FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE
DIVISION OF HOSPITAL FACILITIES



*Approved by the
Division of Hospital Pharmacy,
American Pharmaceutical Association and
American Society of Hospital Pharmacists*

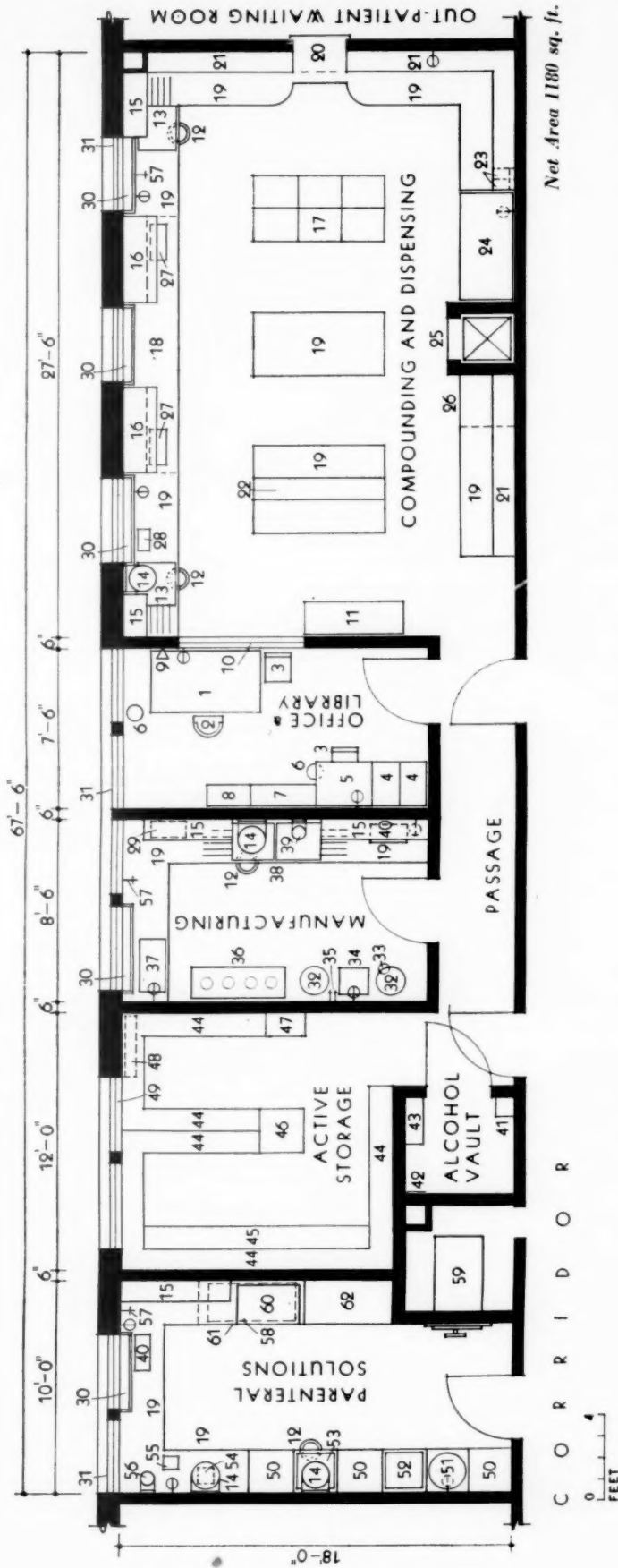
IN TOO many hospitals the pharmacy is inadequate, poorly planned, and badly located. With the volume of pharmaceutical service steadily mounting in recent years this has imposed a severe handicap on efficient operations. The pharmacy is essential to the efficient operation of a hospital, and merits space in an area in keeping with the functions it is to perform.

Mr. Robert M. Cunningham, Jr., managing editor, *The Modern Hospital*, said recently, in *The Architectural Forum*, "Vastly increased space must be provided . . . to store the huge quantities of drugs that must be kept on hand all the time. In addition to the antibiotics, new anesthetic agents and increasing use of parenteral solutions, blood and blood fractions have also pushed back the walls of the hospital pharmacy,

which has been transformed from a hole-in-the-corner drug closet to a pharmaceutical manufacturing and distributing center of substantial professional, financial and architectural proportions."²⁰ Mr. William A. Riley, well known hospital architect, has stated, "As a rule pharmacy planning has not been given sufficient study or importance in its relation to the hospital."¹ Robert R. Cadmus, M.D., assistant director, University Hospital, Cleveland, has substantiated this opinion: "Hospital administrators and architects in many instances have not been too generous in the assignment and planning of the pharmacy."²

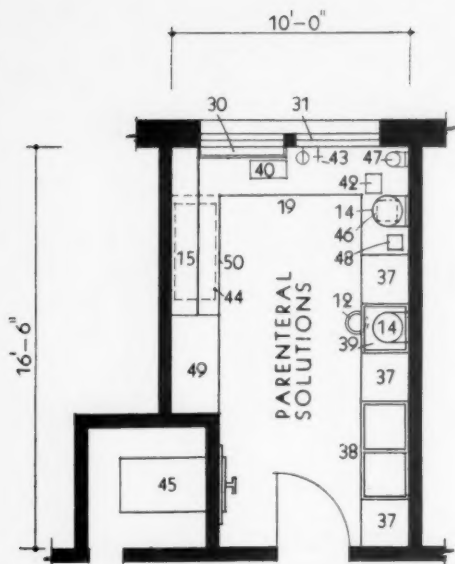
The Division of Hospital Pharmacy of the American Pharmaceutical Association and the American Society of Hospital Pharmacists has collaborated with the Division of Hospital Facilities, U. S. Public Health Service, in the revision of the Public Health Service suggested type plans

Plans by WILBUR R. TAYLOR, Hospital Architect.
Text by ALEX M. MILNE, Pharmacy Consultant.

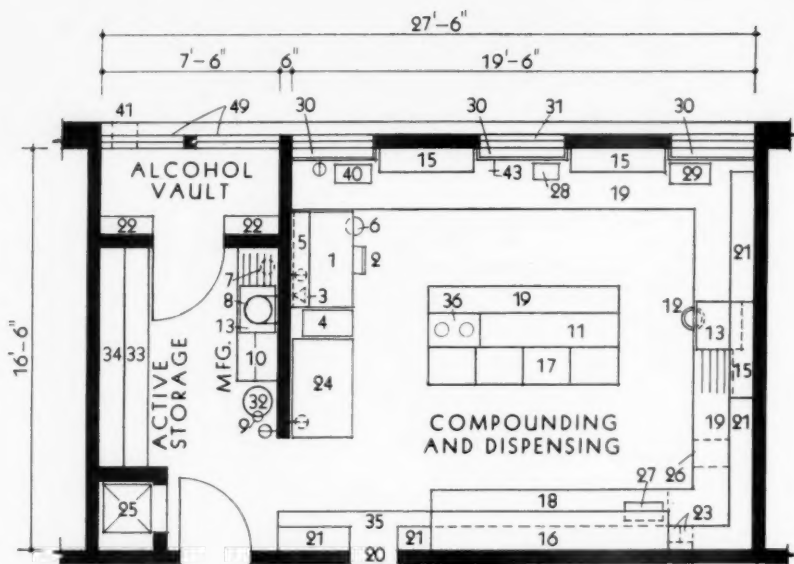


1. Desk, executive
2. Chair, executive
3. Chair, straight
4. File, 4 drawer
5. Table, writing
6. Receptacle, waste paper
7. Case, book
8. Rack, magazine
9. Outlet, telephone
10. Glass panel
11. Rack, carboy
12. Can, sanitary waste
13. Sink, with goose neck spout and drainboard, graduate rack above, cabinets below
14. Tank, glass, distilled water, 12 gallon
15. Cabinets, adjustable shelves
16. Cabinet, drug, sectional type, with shelf above counter
17. Cabinets, drug, sectional type
18. Counter, prescription, cabinets and drawers below
19. Counter, cabinets and drawers below
20. Window, dispensing
21. Shelves, adjustable, open, starting 18 inches above counter
22. Shelf, above counter
23. File, prescription
24. Refrigerator, with biological drawers, 32 cubic feet
25. Dumbwaiter
26. Safe, narcotic, under counter
27. Scale, prescription, class A
28. Scale, prescription, heavy duty
29. Scale, counter
30. Heat outlet grill, inlet grill in base of cabinet
31. Guards, at all windows
32. Tank, mixing or storing, 20 gallons, mounted on stand with casters
33. Mixer, portable, electric
34. Filter press, suction-pressure type, mounted on casters
35. Outlets, hot and cold water
36. Rack, filler
37. Mill, colloidal
38. Sink, two compartment, with drainboard, goose neck spout, cabinets below
39. Still, 2 gallon per hour
40. Hot Plate, double element
41. Vent, outlet, 8 inches above floor to atmosphere
42. Vent, inlet, near floor to atmosphere
43. Shelves, starting 42 inches above floor
44. Shelves, 12 inches wide, adjustable, open
45. Shelves, 24 inches wide, 36 inches high, adjustable
46. Rack, barrel
47. Locker, clothes
48. Radiator, above shelving
49. High windows
50. Rack, bottle
51. Cleaner, bottle, pressure type
52. Sink with goose neck spout
53. Sink, with distilled water rinser, omit hot & cold water supply
54. Drip pan with waste connection in counter top
55. Pump, suction and pressure
56. Still, 10 gallon per hour
57. Outlet, gas
58. Carriage, sterilizer, under counter
59. Sterilizer, 24 x 36 x 48 inches
60. Oven, hot air, 24 x 14 x 14 inches, on counter
61. Counter, open below
62. Cabinet, storage, open adjustable shelves

Pharmacy for a 200 bed general hospital



C O R R I D O R



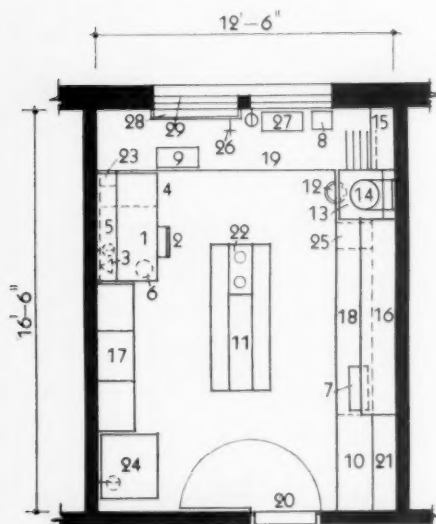
Net Area 630 sq. ft.

Pharmacy for a 100 bed general hospital

1. Desk
2. Chair
3. Outlet, telephone
4. File, 4 drawer
5. Shelves, book, over desk
6. Receptacle, waste paper
7. Still, 2 gallon per hour. Required if parenteral solution room is omitted
8. Tank, glass, distilled water, 5 gallon
9. Mixer, portable, electric
10. Counter, cabinets below, shelves above
11. Rack, carboy, above counter
12. Can, sanitary waste
13. Sink, with goose neck spout and drain-board, graduate rack above, cabinets below
14. Tank, glass, distilled water, 12 gallon
15. Cabinet, adjustable shelves
16. Cabinet, drug, sectional type, with shelf above counter
17. Cabinets, drugs, sectional type
18. Counter, prescription, cabinets, sectional type drawers below

19. Counter, cabinets and drawers below
20. Window, dispensing
21. Shelves, adjustable, open, starting 18 inches above counter
22. Shelves, starting 42 inches above floor
23. File, prescription
24. Refrigerator, 16 cubic feet, with biological drawers
25. Dumbwaiter
26. Safe, narcotic, under counter
27. Scale, prescription, class A
28. Scale, prescription, heavy duty
29. Scale, counter
30. Heat outlet grill, inlet grill in base of cabinet
31. Guards, at all windows
32. Tank, mixing, 20 gallons, mounted on stand with casters
33. Shelves, 24 inches wide, 36 inches high, adjustable, open
34. Shelves, 12 inches wide, adjustable, open

35. Counter, 18 inches wide, adjustable shelves below
36. Rack, filter, above counter
37. Rack, bottle
38. Sink, two compartment, goose neck spout, cabinets below
39. Sink, with distilled water rinser, omit hot and cold water supply, cabinets below
40. Hot plate, double element
41. Vent, at ceiling and floor
42. Scale, metric, solution
43. Outlet, gas
44. Carriage, sterilizer, under counter
45. Sterilizer, 24 x 36 x 48 inches
46. Drip pan with waste connection in counter top
47. Still, 5 gallon per hour
48. Pump, suction and pressure
49. Cabinet, storage, open, adjustable shelves
50. Counter, open below



C O R R I D O R

1. Desk
2. Chair
3. Outlet, telephone
4. File, 2 drawer
5. Shelves, book
6. Receptacle, waste paper
7. Scale, prescription, class A
8. Scale, prescription, heavy duty
9. Scale, counter
10. Counter, shelves below, adjustable, open
11. Rack, carboy, above counter
12. Can, sanitary waste
13. Sink, with goose neck spout and drain-board, graduate rack above, cabinets below
14. Tank, glass, distilled water, 5 gallon
15. Cabinet, adjustable shelves
16. Cabinet, drug, sectional type, with shelf above counter

17. Cabinets, drug, sectional type
18. Counter, prescription, cabinets and drawers below
19. Counter, cabinets and drawers below
20. Dutch door
21. Shelves, adjustable, open, starting 18 inches above counter
22. Rack, filter, above counter
23. File, prescription, on desk
24. Refrigerator, 8 cubic feet, with biological drawers
25. Safe, narcotic
26. Outlet, gas
27. Hot plate, double element
28. Heat outlet grill, inlet grill in base of cabinet
29. Guards, at both windows

Net Area 205 sq. ft.

0 4
FEET

Pharmacy for a 50 bed general hospital

for pharmacies.³ The revised plans presented here are in keeping with current developments in pharmaceutical practice and reflect the growing volume of service the hospital pharmacy is asked to provide.

These plans are offered as guides to those who are planning new hospitals or replanning their old pharmacies. They illustrate and explain relationships between elements which may be adjusted to individual needs.

Who Should Participate in Pharmacy Planning

The hospital administrator, his chief assistants, and the pharmacist, in addition to the architect, should participate in, and contribute to the planning of pharmacy facilities; the administrator, because on this official devolves the basic responsibilities of maintaining efficient operation of the entire hospital within budget limitations; the pharmacist, because he alone is fully cognizant of what constitutes the details of an efficient pharmaceutical service and because he must "live with" whatever pharmacy facilities are provided. Each needless step—each poorly planned storage or work appurtenance—hampers the output and reduces effectiveness. Their advice, based on daily contact, can be most helpful. The following are just a few of the many questions which should be answered at the time the hospital is being planned: Just how frequently are certain facilities required? Just how much storage space does the normal stock of any given class of supplies require? How many persons, ordinarily, must be accommodated, at exactly what work counters, benches, tables, work spaces? Between what areas do such persons' duties require them to travel and how often? These rudimentary questions all too often are treated perfunctorily, with the result of long lasting and needless petty annoyances to the hospital staff.

What Is a Pharmacy

The hospital pharmacy is the department in the hospital from which all medications are supplied to the various nursing units, where special prescriptions are filled for patients in the hospital, (inpatients), where prescriptions are filled for outpatients, where pharmaceuticals are manufactured in bulk, where biologicals are stored and dispensed, where injectible solutions are usually prepared and sterilized.^{4,5,6} And, finally, it is the department where the medical, dental, nursing, and other staff members find helpful consultative advice relative to current drug therapy.

The nursing units and the outpatient department receive the bulk of the pharmaceutical service, but it is also extended to practically every department of the hospital. The Surgical Depart-

ment requires germicidal solutions, anesthetics and other medications; the Emergency Department receives drugs for emergency conditions; the Outpatient Department also requires medications for use in the clinics; the Laboratory obtains reagent solutions from the pharmacy; the X-Ray Department needs radiographic opaques; the Blood Bank, the Dietary and Housekeeping Departments depend on it for chemicals—and various forms of medication.

The volume of service is appreciable as the pharmacy in an average 100 bed general hospital may fill approximately 12,000 prescriptions and dispense 11,000 requisitions and ward orders, other than prescriptions, in a single year. The purchase of drugs and chemicals may approximate \$34,000 and the value of the annual inventory \$6,000.⁷ These will vary according to the extent of the outpatient department.

The pharmacy must be planned in relation to the other medical services. The functions to be performed, the volume of service, including outpatient, the traffic between the pharmacy and the departments which it serves, should determine the location and space requirements.

It is desirable, therefore, that the hospital pharmacist be brought into the planning discussions in the very beginning. His specialized knowledge of procedures, the equipment required and the space needed to do the work, is necessary in the intelligent development of a program for this department.

Where Should the Pharmacy Be Located

In hospitals of less than 200 beds the pharmacy should be located on the first floor, in the center of the activities it is called upon to service frequently, easily accessible to the elevator, and near or adjoining the outpatient department, if such is maintained by the hospital. This will provide the most efficient service and conserve man-hours of work.

Though it is recommended that the pharmacy be all located on one floor, it may be varied in larger hospitals when first floor space is at a premium.

The basement is not desirable for a pharmacy.⁸

How Much Space Is Required For the Pharmacy

The arrangement of the pharmacy depends upon the size and type of hospital in which it functions. The small hospitals, those of less than 100 beds, usually combine all pharmaceutical functions in one room. As the volume increases and more specialized procedures are added, separate facilities are required for compounding and dispensing, manufacturing, preparing sterile products and additional drug storage space.

Area Distribution for General Hospital Pharmacies

| AREAS IN SQUARE FEET | 50-BED | 100-BED | 200-BED |
|---------------------------------------|------------|------------|-------------|
| Compounding and Dispensing Laboratory | 205 | 320 | 495 |
| Parenteral Solution Laboratory | | 185 | 200 |
| Active Store Room | | 125 | 200 |
| Manufacturing Laboratory | | | 120 |
| Office and Library | | | 105 |
| Circulation | | | 60 |
| TOTAL | 205 | 630 | 1180 |

Areas shown in Table are net areas and do not include walls and partitions. Additional storage space is provided for bulk pharmacy stores in an area directly beneath the pharmacy and separate from central stores.

The above areas are suggested as guides to be used in planning pharmacies in the various size general hospitals:

PHARMACY: 50 BED GENERAL HOSPITAL

This represents the minimal size pharmacy, recommended for any small hospital, preparing, dispensing and controlling pharmaceutical supplies, all in one room. However, the functions previously mentioned are essentially the same in all size hospitals.

For the patients in the hospital, (inpatient) this usually requires the preparation of drug stocks and medications for placement in the medicine cabinets at the various services and clinics throughout the hospital.

The ideal method employed in the larger hospital pharmacies is to have floor drug stock pre-bottled in anticipation of use. When the morning drug baskets are filled or when a floor order requests a drug, the medication can be quickly and easily dispensed.⁴

Medications are also prepared and dispensed for the outpatient. This is simplified where the hospital operates under a Pharmacy and Therapeutics Committee and with a hospital formulary.

Adequate storage space is essential in the pharmacy. Proper arrangement of equipment is an urgent necessity for efficiency and service.

The proper storage of drugs and chemicals demands equal attention in planning the distribution of stock. Improper temperatures, moisture and sunlight, can be quite costly in money and service. These problems are well known to pharmacists, and require constant vigilance.⁹

The suggested type plan illustrates a functional arrangement.

The prescription counter (18) is for compounding and dispensing and should be designed to contain within easy reach a representative assortment of the frequently dispensed chemicals and pharmaceuticals, utensils, and containers.

The numbers in parentheses refer to the equipment and facilities in the indicated floor plans.

Cabinets, drawers and shelves are required for several hundred chemicals and pharmaceuticals in various forms and strengths, which come in all types and sizes of containers. The required quantity of each must be kept in stock ready for immediate use. Storage space is also provided in the sectional cabinet (17).

Floor and department drug orders may be filled on the counter in the center of the room without disturbing the stationary equipment. The carboy rack (11) above the counter is designed to hold several large dispensing bottles of prepared solutions. The filter rack (22) at the end is convenient to the window counter (19), which may be used for small scale manufacturing.

A refrigerator with metal drawers (24) is necessary to retain maximum potency of biologicals and thermolabile preparations.

The safe (25) is for narcotics and hypnotics. Federal laws require that narcotic preparations shall at all times be properly safeguarded and securely kept.¹⁰

A glass storage tank (14) for distilled water is suspended on a wall bracket above the sink. The water still is omitted from this size pharmacy because of the close proximity of the still in the Laboratory or Central Sterilizing and Supply.

To the right of the dutch door (20), a series of shelves (21) has been provided for "will call" items or those awaiting delivery to the floors.

PHARMACY: 100 BED GENERAL HOSPITAL

The pharmacy functions are similar to those outlined under the 50 bed hospital. There will be a more extensive pharmaceutical service; therefore, provision should be made for a limited expansion of manufacturing and a proportionate increase in all routine procedures may be anticipated.

Additional storage space will be necessary as the number of individual chemicals and pharmaceuticals will seldom be less and frequently more than 800. This is especially acute when the hospital does not have a Pharmacy and Therapeutics Committee or a formulary.¹¹

In this size hospital the preparation of parenteral solutions may be considered.

The suggested type plan illustrates the arrangement.

Parenteral Solution Laboratory

One of the important duties of a hospital pharmacist is the preparation of sterile solutions. This involves rigid control of the preparation of Water for Injection U.S.P. and the handling and cleansing of containers as well as all other equipment used in their preparation and administration. The preparation of parenteral solutions is one of the most exacting and difficult services the hospital pharmacist can undertake. He should not assume this responsibility unless he has been adequately trained, has been provided the special laboratory space and equipment and enforces rigid controls.^{4,12}

The proper equipment is expensive, but may be considered as an investment because the total expenditure represents only a nominal per cent of the gross income from parenteral solutions.¹³

The consumption of parenteral solutions varies in the individual hospital. A 100 bed general hospital may use from 5,000 to 7,500 flasks annually of the various solutions, the flasks ranging from 250 cc. to 2,000 cc. A 200 bed general hospital will use more than double this quantity.

In addition, there are a number of sterile solutions which are prepared and packaged in small multiple dose vials, 30 cc. to 60 cc. in size.

If the volume of work justifies it, a hot air oven may be located here. Otherwise the unit in central sterilizing may be used for the sterilization of substances such as petrolatum, oils, glycerin, fats and powders which resist penetration by moist heat or are injured by it.

Surgical fluids may also be prepared and flaked in the sterile solution laboratory similar to the parenteral solutions.¹⁴

A separate, enclosed, dust-free, preferably air conditioned room, should be maintained for the preparation of sterile solutions.⁴

The arrangement of the Parenteral Solution Laboratory should provide for a sequence of operations: (a) Stacking the flasks in the first rack (37) after collection and return to the pharmacy; (b) Washing with detergent solution in a high pressure bottle cleaner or manually in a sink (38); (c) Washing in tap water; (d) Rinsing in fresh distilled water (at sink 39) to remove any pyrogen contaminating the flasks' inner surface; (e) Filling, and tagging, in the preparation and compounding area (at 48, 42), then on to the sterilizer carriage (44); (f) Sterilizing in the single shell solution sterilizer (45); (g) Sealing the sterilized flasks and labeling.

The finished stock may be partially stored in the cabinet (49); kept in the store room or distributed to Central Sterilizing and Supply. The plan shows minimal space for this technic.

Active Store Room

The active store room holds the reserve stock of the many items which are represented in smaller size units in the compounding and dispensing laboratory. This conserves the drug cabinet storage space in the latter and facilitates dispensing.

It should also be kept in mind that manufacturing in a hospital pharmacy requires space for raw materials, empty bottles and for finished stock. The shelves (33, 34) like all others in the pharmacy should be adjustable, since the pharmacy stock is always changing.

In addition to the active store room, storage space is required for bulk pharmacy stores in an area directly beneath the pharmacy with a dumbwaiter connection, and not in general or central stores. The bulk pharmacy storage is under the jurisdiction of the pharmacist, because he is best qualified to assume this responsibility and for the well recognized reasons of efficiency and economy.

The equipment needed for bulk stores is: open adjustable metal shelving, barrel platforms, drum pumps, and racks.

A small manufacturing area is combined with the active store room for manufacturing bulk quantities (32). A small water still (7) will be required if the parenteral solution laboratory is omitted.

Alcohol Vault

A separate locked, fireproof room is necessary for the storage of alcohol and volatile liquids. This must conform to the local fire regulations.¹⁵ Shelves (22) are needed for small containers above the height of the drums.

The electric dumbwaiter (25) is an important feature, because it will carry orders to and from the nurses' station on the floors above, saving the time of the nurse or attendant. It may also be utilized to bring up stock from the bulk storage room, situated directly below the pharmacy. If necessary, a dumbwaiter may be placed equidistant between the pharmacy and central sterilizing and supply, the other department which renders similar type service.

Compounding and Dispensing Laboratory

The area along the windows (19) is designed to be used for manufacturing. The area to the right will be used in filling floor stock in the morning. Any requests for floor stock during the remainder of the day can easily be filled from the stock on shelves (21) in this area. The space beneath the work counter will be used for storage of pre-

packaged floor stock. The unit in the center of the room provides: a work counter (19) with a carboy rack (11), and a small gravity filter rack (36) facing the manufacturing area; additional storage space is provided in the sectional drug cabinets (17) which are convenient to the prescription counter (18). To the left are located a refrigerator, desk, bookshelves, and files.

The section of shelves (21) at the left of the dispensing window (20) will serve to contain pre-packaged outpatient stock. The shelves at the right will contain miscellaneous tablets and capsules for outpatient use that do not warrant pre-packaging. The counter (35) below the shelves may be used for a typewriter or cash register.

PHARMACY: 200 BED GENERAL HOSPITAL

In a general hospital of 200 beds the Pharmacy begins to have growing pains. The volume of routine procedures is substantially increased and more complicated. This calls for more equipment and more space.

If more functions are included in one room in a hospital of this size, a confused, crowded and poorly operating Pharmacy will result.

The suggested type plan illustrates an arrangement that is logical.

Parenteral Solution Laboratory

The technic of preparing parenteral solutions in the 200 bed hospital is essentially the same as in the 100 bed hospital, except in the method of filling (referred to as "e"). The volumetric method may be used here instead of the metric. The increase in area makes the handling of larger batches less difficult. A hot air oven (60) is now required for the procedures previously mentioned.

Active Store Room

Larger quantities of pharmaceuticals and chemicals must be kept in stock to meet the heavier demands of a hospital of this size. Additional storage space (44, 45) is provided. A door leading from the outside corridor into the store room permits direct access for supply trucks and alcohol drums, which are stored in the vault.

Manufacturing Laboratory

The hospital pharmacist will manufacture those preparations that can be prepared more economically in his laboratories than they can be purchased, these include many preparations containing alcohol. Federal regulations allow the use of tax-free alcohol in non-profit institutions.¹⁶

A manufacturing laboratory is essential to a well run hospital pharmacy not only to provide economy but also to facilitate research. The amount of pharmaceutical manufacturing will vary with the number of beds and the size of the Outpatient Department. In this plan the manufacturing laboratory is designed for average ca-

capacity, but it should be planned for flexibility to meet any future expansion.

The equipment shown facilitates economical manufacturing.

The 20 gallon mixing tank (32) with a portable electric mixer or agitator clamped to the side (33) is used for preparing the routine bulk fluids which are transferred to the storage tank (32) by a pressure type filter (34) when filtration is indicated. Smaller batches of liquids are filtered on the gravity filter rack (36). The colloid mill (37) is used for preparations requiring fine dispersion. The water still (39) and storage tank (14) wall mounted, are to furnish and store the copious requirements of fresh distilled water. The sink assembly (38) is situated underneath. The heavy duty double element hot-plate (40) is necessary.

Office and Pharmacy Library

The pharmacist's office should be suitable for conferences without interfering with the efficiency of the department but located so that the dispensary is supervised. It should be readily available to the medical staff in order to render consultative service.

Here all records are kept, purchase orders are made out, requisitions and invoices are priced, recorded and filed. This area should also contain a good library of reference books on pharmacology, drugs and chemicals and therapeutic uses, which are essential to modern pharmaceutical practice.¹⁷

In addition to the desk (1), files (4), and other office equipment; book shelves (7), a magazine rack (8) for professional journals, and a reading table (5) are required for the intern or physician.

A window in the office permits a view of the adjacent dispensing area.

Compounding and Dispensing Laboratory

The operations are essentially the same as in the 100 bed hospital pharmacy. The area along the windows (18) will be used for compounding and dispensing; two Class A prescription balances (27) and a heavy duty balance (28) are provided. The area to the right is designed for the outpatient section (19); adjustable shelves above the counter (21) will serve to contain pre-packaged outpatient stock and the stock that does not warrant pre-packaging.

A dispensing window (20) faces the outpatient waiting room. Seats should be provided for patients.

The 32 cubic foot refrigerator (24) will generally suffice; in certain instances a walk-in refrigerator may be indicated.

The electrical dumbwaiter (25), and the narcotic safe (26) have been referred to on the previous plans. The counter and shelves (19, 21) to

the left of the dumbwaiter, are for pre-packaged floor stock.

The carboy rack (11) is larger, to hold an increased number of dispensing bottles of prepared solutions. The area in the center of the room will be used in filling floor stock; the work counter (19) with stationary shelf above (22), and the receiving counter (19) are placed to permit free movement across the room. Additional storage space is provided in the sectional drug cabinets (17).

Equipment

A modern pharmacy fixture—a cabinet, counter, desk, case, sink assembly—is a highly specialized unit which calls for basic knowledge of that special purpose. Such fixtures are available in standardized units from several manufacturers who specialize in pharmacy and laboratory casework.

Equipment lists are helpful guides for those planning new pharmacy facilities. However, it is not possible to provide an equipment list to cover the variable factors which are encountered in a particular hospital. The pharmacist should be consulted to see that the list used provides the specific equipment he will need.

The Division of Hospital Facilities, U.S. Public Health Service, has prepared pharmacy equipment lists for 50, 100 and 200 bed general hospitals.¹⁸ These are available for general distribution. Also available are supply lists including the initial stock of pharmaceuticals and chemicals, medicinal gases, and prescription containers.

Electric Lighting and Ventilation

Good lighting and ventilation are important in the pharmacy. For general illumination, the current recommended practice is 30 foot candles and 50 foot candles where necessary,¹⁹ such as above the prescription counter and the preparation unit in the parenteral solution laboratory. Fluorescent lighting is most satisfactory. Receptacle outlets should be provided in all places where plug-in service is likely to be required.

Air conditioning is desirable for the pharmacy because it obviates the necessity of opening windows. This is especially true in the "sterile" parenteral solution laboratory, where dust, dirt, and airborne bacteria are a source of contamination. The autoclave and hot air oven are also likely to make working conditions unpleasant in the hot weather.

The electric dumbwaiter shown in the 100 and 200 bed hospital pharmacies provides rapid service to the nursing stations on the floors above.

In the larger hospitals pneumatic tube systems may be used to deliver requisitions to the pharmacy, central sterilizing and supply and other departments.

Finishes

The floors of the pharmacy should be resilient, smooth, acid and stain resistant. Such materials as greaseproof asphalt tile, rubber tile, or heavy linoleum are considered satisfactory. The floors of the parenteral solution and manufacturing laboratories require special treatment, and should be non-skid, waterproof, and easily cleaned. The manufacturing room should be provided with a floor drain.

The walls should be done in a light-color, washable finish. Mat face ceramic tile is preferable in certain areas such as above the counters in the parenteral solution room, and behind the mixing tanks and filter racks in the manufacturing laboratory.

Plumbing

Acid resistant piping is used for waste lines. Pharmacy sinks with swivel faucets and drain-board, designed for this use, are preferred. In the manufacturing areas the swivel faucets should be high enough to allow five-gallon carboys to be easily cleaned and rinsed. Exposed piping should be kept to a minimum necessary for proper maintenance.

CONCLUSION

In planning the hospital pharmacy the principal points for consideration are: (a) Early participation of the administrator and the pharmacist, with the architect in the planning; (b) A central location; (c) Adequate space to permit an efficient arrangement of equipment; (d) The necessary equipment to furnish competent service and reduce medication cost per patient day.

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Catholic Hospital Association Convention

The Catholic Hospital Association will convene in Milwaukee for its 35th annual meeting, June 12-15. "Regional Planning to Strengthen the Voluntary Hospitals" has been selected as the theme for the 1950 convention. Into this theme will be introduced the cooperative idea and to some extent the plan of integration providing for all types of service. Cooperation between the small and large hospital will be stressed to afford the management of small hospitals aid on the clinical services, in educational programs for staff members of the smaller units and in administrative areas as well.

The convention will face the issue of "The Practice of Medicine by the Hospital." It will also examine and review the problem of supplying complete hospital service to those in the rural areas. The role of government in any program will be studied with great care—in educational programs as well as in hospital service plans. In conjunction with the formal program will be the technical exhibit and the educational displays.

The Wisconsin Society of Hospital Pharmacists will be in charge of the exhibit sponsored by the Division of Hospital Pharmacy of the A.Ph.A. and the A.S.H.P. at the convention.

One of the pre-convention meetings includes the second annual Institute for Hospital Pharmacists, sponsored by the Catholic Hospital Association. Outstanding pharmacists will serve as faculty members.

Hospital Pharmacist Speaks at Alabama Polytechnic Institute

E. W. Rollins, chief pharmacist at North Carolina Baptist Hospital, recently spoke at the Alabama Polytechnic Institute, Auburn, Ala., on the subject, "Hospital Pharmacy Operation."

Paul Bjerke Speaks at Nurses Institute

Mr. Paul Bjerke, chief pharmacist at Luther Hospital in Eau Claire, Wis., was a speaker at the Institute for Private Duty Nurses, held in Eau Claire on April 27. Mr. Bjerke spoke on "New Drugs."

Decomposition of **PARA-AMINOSALICYLIC ACID**

By H. ALTBACH and C. HURWITZ

Para-AMINOSALICYLIC ACID is now widely used in conjunction with streptomycin for the treatment of tuberculosis. The most common method of dispensing the drug is by preparing a 20 per cent solution of the sodium salt of para-aminosalicylic acid (sodium PAS) which is formed by dissolving PAS in a sodium bicarbonate solution, the proportions being 100 grams of PAS to 60 grams of sodium bicarbonate. Since the sodium PAS solution decomposes on standing, the Eighth Veterans Administration Streptomycin Conference has recommended that the drug be discarded after 48 hours.⁵

Sodium PAS is expensive and not easily made because of excessive effervescence. Both pharmacists and clinicians are therefore interested in how long the drug may be kept before decomposition renders it therapeutically unusable.

Some work has been done with the browning of salicylate solutions. It can be inferred that the browning of sodium PAS is probably caused by similar reactions. Brecht and Rogers found the brown pigment to be insoluble in acid solution and to have an empirical formula $C_{12}H_8O_6$.¹ They postulated the formation of a compound similar to 3,5,3',5'-tetrahydroxydiphenylquinone-4, 4', although the salicylate brown had only three hydroxyl groups. Grill also found that colorless solutions of salicylates changed to a very dark brown in the presence of sodium bicarbonate.² He suggested the formation of a colored quinoid structure as a result of the oxidation of salicylates by atmospheric oxygen, light, and the presence of iron. Wesp and Brode, on the basis of spectrophotometric absorption studies of the ferric chloride reaction with phenols, postulated the formation of a Werner complex with iron.⁶

Data obtained from Merck and Company stated that commercial PAS contains 90 to 95 per cent of 4-amino-2-hydroxybenzoic acid. Decarboxylation was rapid in acid solution, but very slow at

pH 7 or higher. Only 3 per cent decarboxylation occurred on heating for twenty minutes at 120 degrees C. at pH 7. O'Connor noted that neutralization of PAS should be done with mild alkalis, such as sodium bicarbonate since the solution gradually turned brown if excess alkali was present.⁴ Gentle heating increased the rate of decomposition. He also noted the production of browning by the formation of *m*-aminophenol as the result of decarboxylation in acid solution. A note appended to O'Connor's paper stated that Scandinavian workers consider the purity of sodium PAS solutions of no great clinical significance. Brown "impure" solutions have shown effective bacteriostatic activity in *in vitro* tests.

The present study is an attempt to determine the rate of decomposition under ordinary conditions of handling of 20 per cent solutions of the sodium salt of PAS. Studies were also carried out to determine whether practical variations in handling might decrease the rate of decomposition. These studies can be grouped mainly into three phases: (1) effect of decomposition of sodium PAS on the reactivity of the amino group; (2) the formation of color as a function of rate of decomposition; and (3) rate of decomposition as functions of light, temperature, and purity and concentration of sodium bicarbonate.

EXPERIMENTAL

The reactivity of the amino group was studied by means of the diazotization reaction of the Marshall method for determination of an aryl amino group.³ A 1:100,000 dilution of the 20 per cent sodium PAS solution was treated in the cold with sodium nitrite and hydrochloric acid for three minutes. The diazotization was then stopped by addition of ammonium sulfamate, and a chromophoric group, N-(1-naphthyl)-ethylenediamine dihydrochloride, coupled on. After twenty minutes,

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the transmission of the color intensity was read at 540 $m\mu$ and the concentration of the aryl amino group was found from a previously prepared analytic curve in terms of fresh sodium PAS.

Measurements of pH made by means of a Beckman pH meter, Model G, using a glass electrode.

Transmission curves of the sodium PAS solutions were made with the Beckman Model DU spectrophotometer using the blue sensitive tube. The reference solution was distilled water and the 1.005 cm. quartz cuvettes were used. Transmission readings of the sodium PAS solutions at 400 $m\mu$ were made with the Junior Coleman Spectrophotometer, using Coleman 16 mm. (inside diameter) tubes.

TABLE I
EFFECT OF DECOMPOSITION OF SODIUM PAS ON THE
REACTIVITY OF THE AMINO GROUP

| Dilution | Per cent transmission at 400 $m\mu$ | Conc. of sodium PAS as measured by amino group reactivity. Gm. per 100 ml. |
|---|-------------------------------------|--|
| Fresh solution | 1:10 | 72.0 |
| 14 day old solution at 4 degrees C. | 1:10 | 24.3 |
| 14 day old solution at room temperature | 1:100 | 20.0 |

The first set of experiments was concerned with finding whether the amino group was involved in the browning of the sodium PAS solution. A 20 per cent sodium PAS solution, prepared by reacting 100 grams of PAS with 60 grams of sodium bicarbonate U.S.P., was permitted to decompose at room temperature (24 degrees C.) and in the refrigerator (4 degrees C.) for 14 days. A PAS determination and a transmission reading of the proper dilution at 400 $m\mu$ were made on the fresh solution and on the two 14 day old solutions. This determination really measures the reactivity of the aryl amino group. Results are given in Table I. No change in amino group concentration was found although the solution kept at room temperature became very dark as is illustrated by the extent of dilution necessary to obtain a transmission reading.

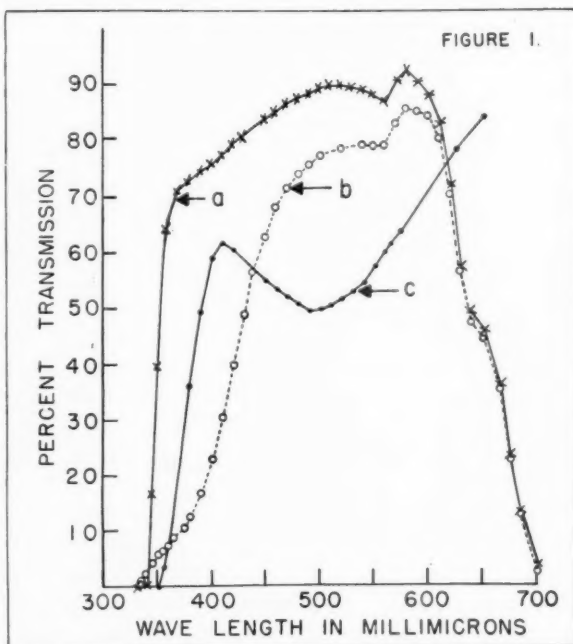
A study of the transmission spectra of fresh and decomposed 14 day old sodium PAS was then undertaken. An additional colored solution was prepared by adding a small amount of ferric chloride solution to sodium PAS. Transmission values of these solutions were determined in the Beckman spectrophotometer from 200 $m\mu$ to 710 $m\mu$. Distilled water was used as the reference solution.

The curves of the fresh and decomposed sodium PAS solutions (Figure 1) showed complete absorption below 330 $m\mu$ and above 710 $m\mu$.

Marked differences between fresh and decomposed sodium PAS solutions occurred below 600 $m\mu$, the maximum difference occurring at 370 $m\mu$. The decomposition products of sodium PAS therefore resulted in increased absorption from about 345 $m\mu$ to 600 $m\mu$. Below 345 $m\mu$ a small band of decreased absorption was found. It is evident that the extent of decomposition may be measured as a function of absorption from 350 to above 500 $m\mu$. Maximum differences in absorption occurred at 370 $m\mu$, but since the Junior Spectrophotometer, which was used by us in further work as a matter of convenience, does not measure below 400 $m\mu$, this latter band of light was used.

The transmission spectrum curve of the ferric chloride-sodium PAS solution indicates that the browning reaction of sodium PAS was not caused by ferric ion impurities in the sodium bicarbonate. No absorption band was found at 500 $m\mu$ in the sodium PAS solution which corresponded with the strong absorption band found in the ferric chloride-sodium PAS solution.

FIGURE 1. TRANSMISSION SPECTRUM CURVES OF SODIUM PAS SOLUTIONS

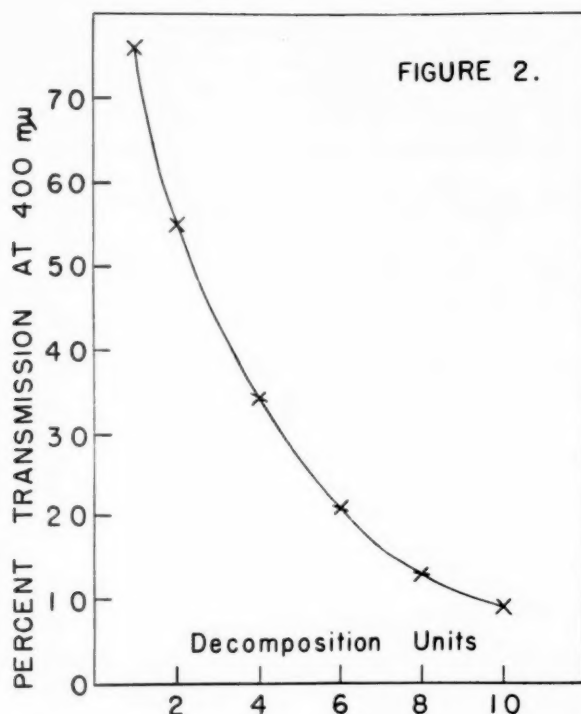


Curve a; 1:10 dilution of freshly prepared sodium PAS. Curve b; 1:100 dilution of a 14 day old sodium PAS solution kept at room temperature. Curve c; 1:10,000 dilution of ferric chloride-sodium PAS solution.

In order to establish a measure of decomposition, the assumption was made that a freshly prepared sodium PAS solution already contained a small amount of decomposition products. All

further decomposition was related to this initially present decomposition in the following manner. A freshly prepared sodium PAS solution*, pH 7.02, was diluted as indicated in Figure 2 and transmission measurements were made at 400 $m\mu$ in the Junior Coleman Spectrophotometer. These transmission-concentration values conformed to Beer's Law in the concentrations used. If the con-

FIGURE 2. CURVE ESTABLISHING DECOMPOSITION UNITS OF SODIUM PAS

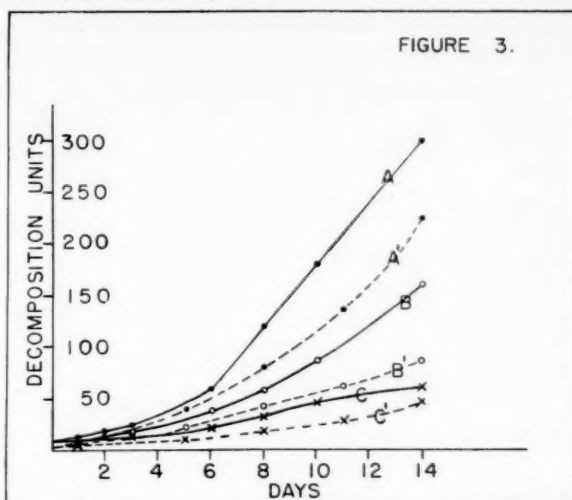


Decomposition units are expressed as ml. of freshly prepared sodium PAS solution diluted to 10.0 ml. with distilled water (see footnote).

centration of decomposition products present in a 1:10 dilution of freshly prepared sodium PAS solution is arbitrarily chosen as one unit, a measure of decomposition based on transmission values at 400 $m\mu$ can now be used. Transmission values in Figure 2 were plotted against concentration of sodium PAS (ml. freshly prepared sodium PAS diluted to 10.0 ml.). The extent of decomposition of a 20 per cent sodium PAS solution can be determined by diluting the solution until it gives a transmission reading falling between 70 per cent and 15 per cent, finding the decomposition units present in the diluted sample from the curve, and multiplying by the dilution factor

*Later results showed that the U.S.P. sodium bicarbonate used for these results contained impurities which resulted in initially higher decomposition values and hastened decomposition. The decomposition unit curve established with this sodium bicarbonate was nevertheless retained.

FIGURE 3. DECOMPOSITION OF SODIUM PAS AS FUNCTIONS OF LIGHT, TEMPERATURE, AND PURITY OF SODIUM BICARBONATE



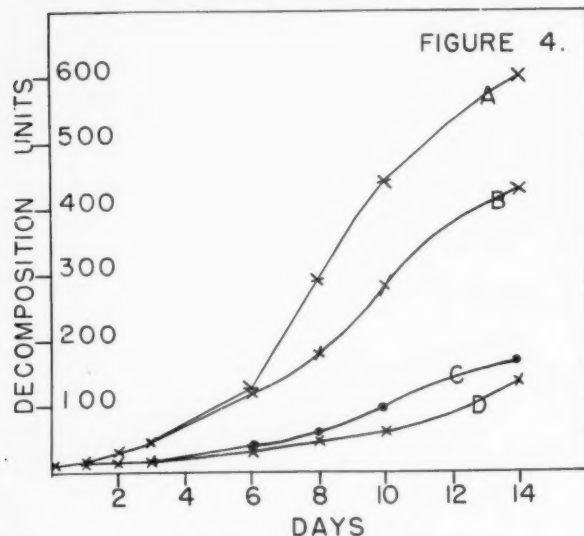
Curve A; sodium PAS solution prepared from sodium bicarbonate U.S.P. and kept in an untaped Kimble graduate cylinder at room temperature. Curve B; same as A, but kept in a taped cylinder. Curve C; same as B, but kept at 4 degrees C. in a refrigerator. Curves A', B', and C' same as A, B, and C, respectively, except that C.P. sodium bicarbonate was used instead of U.S.P. grade. Better grades of U.S.P. sodium bicarbonate gave substantially the same results as C.P. sodium bicarbonate.

to determine the decomposition units present in the undiluted sample. This freshly prepared 20 per cent sodium PAS solution therefore contained ten decomposition units by definition.

Studies of decomposition of sodium PAS were then undertaken by this method as functions of time, temperature, and light (Experiment 1). A freshly prepared sodium PAS solution (20 per cent, pH 7.02, 100 grams of PAS to 60 grams of sodium bicarbonate) was divided among four glass-stoppered Kimble graduates. Two of these graduates were completely covered with adhesive tape to exclude light and two were not taped. One taped and one untaped graduate were placed in a refrigerator at 4 degrees C., and one of each was kept at room temperature. Extent of decomposition was measured periodically for 14 days by the transmission method described above. The results are found in Figure 3 (solid lines). It is obvious from the data that both light and temperature are important to the rate of formation of decomposition products. The sodium PAS solution exposed to both light and room temperature (A, untaped) had a greater rate of decomposition than the solution exposed to less light at the same temperature (B, taped). The solution kept at 4 degrees C. (C) showed markedly less decomposition. After six days in the refrigerator, the amount of decomposition product had only doubled.

A study of the use of ordinary dispensing pharmaceutical glassware was then undertaken (Experiment 2).^{*} A similar fresh solution of sodium PAS was divided between four prescription

FIGURE 4. EFFECT OF STORAGE OF SODIUM PAS IN CLEAR GLASS AND AMBER GLASS ON THE RATE OF DECOMPOSITION



Curves A and C; clear glass at room temperature and 4 degrees C. respectively. Curves B and D; amber glass at room temperature and 4 degrees C.

bottles. Two of these bottles were of clear glass, while two were of amber glass. One of each was placed in the refrigerator; the other two were kept at room temperature. Figure 4 illustrates the results obtained. The use of both clear and amber glass resulted in a greater rate of decomposition than the use of Kimble glassware. Thus the decomposition rate in untaped Kimble glass was considerably less than the rate in clear or amber prescription bottle glass. The rate of decomposition in taped Kimble glass at room temperature (see B, Figure 3) was almost the same as the rate of decomposition in clear glass at 4 degrees C. The use of amber glass resulted in a slower rate of decomposition than the use of clear prescription bottles both at room temperature and at 4 degrees C.

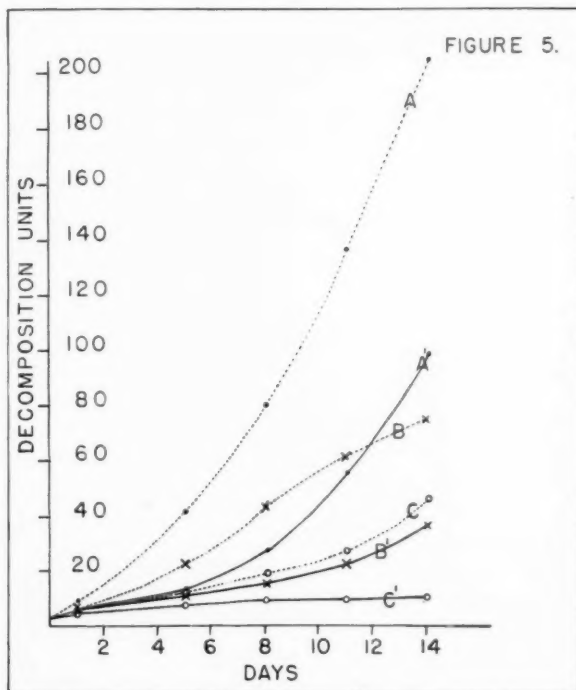
The use of a more highly purified sodium bicarbonate was then studied (Experiment 3) since it was felt that impurities might hasten the decomposition. A better grade of U.S.P. sodium bicarbonate and C.P. sodium bicarbonate was used to prepare sodium PAS. The ratio of PAS to sodium bicarbonate was 100 grams of PAS to 60 grams of sodium bicarbonate as before.

^{*}Sodium bicarbonate used in Experiments 1 and 2 was the same impurity-containing reagent used in the determination of the decomposition curve. In all later experiments, a more highly refined U.S.P. or C.P. grade of sodium bicarbonate was used as indicated.

From Figure 3 it can be seen that the initial amount of decomposition (decomposition units present just after preparation) and the rate of decomposition decreased as the purity of the sodium bicarbonate improved.

The concentration of sodium bicarbonate used was then studied (Experiment 4) since O'Connor had pointed out that decomposition markedly increased with the presence of excess alkali.⁴ As presently recommended by the Veterans Administration, 100 grams of PAS are reacted with 60 grams of sodium bicarbonate to form the sodium salt. Stoichiometrically, 54.9 grams of sodium bicarbonate are sufficient to react with 100 grams of PAS. A 20 per cent solution of sodium PAS was prepared using 100 grams of PAS to 56 grams of sodium bicarbonate C.P. (the slight excess greatly aids solution of the PAS as the sodium salt). The initial pH was 6.25. The results of studies of rate of decomposition are found in Figure 5. Again exclusion of light and lowering of temperature decreased the rate of decomposition, but even

FIGURE 5. RATES OF DECOMPOSITION OF SODIUM PAS AS FUNCTIONS OF CONCENTRATION OF SODIUM BICARBONATE



Curve A; sodium PAS solution prepared from PAS and sodium bicarbonate in the ratio of 100/60 and kept in an untaped Kimble graduate cylinder at room temperature. Curve B; same as A, but kept in a taped cylinder. Curve C; same as B, but kept at 4 degrees C. in a refrigerator. Curves A', B', and C'; same as A, B, and C, respectively, except that the PAS-sodium bicarbonate ratio was 100/56.

more striking were the greatly reduced rates of decomposition of the higher ratio (100/56) as compared with the lower ratio (100/60) of PAS to sodium bicarbonate. At 4 degrees C. the rate of decomposition is so slow that after 14 days the total number of decomposition units just about equals the number found in the freshly prepared sodium PAS in the early part of this experimental work (see Figure 3 and footnote page 133).

DISCUSSION

The best type of glass to be used awaits a more complete study of the wave lengths of light concerned. It can be pointed out at this time, however, that maximum absorption bands were found both in the ultraviolet below 330 $m\mu$ and in the near infrared above 710 $m\mu$. It is the authors' opinion that the activating light concerned is more apt to be found in the near infrared than in the ultraviolet since the amount of ultraviolet irradiation to which the solutions were exposed in glass containers in the laboratory must have been minute indeed. It is also possible that the decreased rate of decomposition found in Kimble glassware may be caused either by the presence of decomposition inhibitors at the glass-liquid interface in the Kimble glassware, or the presence of activator impurities in the glass of the other types of containers used. Metal caps, of course, should not be used.

The quantitative effects of light and temperature cannot be clearly evaluated from the data thus far gathered. That light is a factor is clearly shown by comparing the taped and untaped graduates at room temperature, and that temperature is also a factor is shown by comparing the solution kept at 4 degrees C. with their counterparts at 24 degrees C. The proper method of storage to decrease the rate of decomposition would appear to be by refrigeration. Of the types of glass containers apt to be used, amber glass bottles result in less decomposition than clear glass.

The recommendation by the Veterans Administration to discard sodium PAS solution after 48 hours in the refrigerator is not substantiated by our results. The increase from 10 to 20 or 30 decomposition units in 6 days at 4 degrees C. when the 100 grams PAS to 60 grams of sodium bicarbonate ratio is used, cannot be considered a significant loss of therapeutic value of PAS; nor do the authors know of any data which would indicate these decomposition products to be toxic in the small concentrations implied. Furthermore, when the ratio is increased to 100 grams of PAS to 56 grams of sodium bicarbonate C.P., the solution thus prepared can be kept under refrigeration for much longer periods of time with even smaller amounts of decomposition.

The chemical products formed by decomposition of sodium PAS are not well understood. However, certain products may be ruled out. Decarboxylation to *m*-aminophenol is not important if it occurs at all in the type of browning studied in these experiments since the solutions at pH 6.25 (100 grams of PAS to 56 grams of sodium bicarbonate) decomposed much more slowly than solutions at pH 7.02 (100 grams of PAS to 60 grams of sodium bicarbonate). Since decarboxylation is favored by acid conditions, browning would be more rapid at the lower pH if the browning were caused by the formation of *m*-aminophenol.

Reactions involving the amino group are ruled out by our results which show no change in the reactivity of the group as the sodium PAS decomposed.

The products formed are therefore probably oxidation compounds of phenol having quinoid and multi-ring structures.

SUMMARY

1. The effect of light and temperature on the rate of decomposition of sodium PAS solutions was studied. An arbitrary method based on color development was devised as a measure of decomposition.
2. No correlation was found between color development and loss of amino group reactivity.
3. The rate of decomposition was increased by exposure to light and an increase in temperature.
4. The use of an impure grade of sodium bicarbonate increased the rate of decomposition.
5. Increasing the ratio of PAS to sodium bicarbonate from 100/60 to 100/56 reduced the rate of decomposition.
6. It is proposed that a 20 per cent sodium PAS solution prepared by reacting PAS with sodium bicarbonate C.P. in the ratio of 100/56 can be kept for at least two weeks in the refrigerator at 4 degrees C. The solution should be protected from light and should not be stored in bottles with metal caps.

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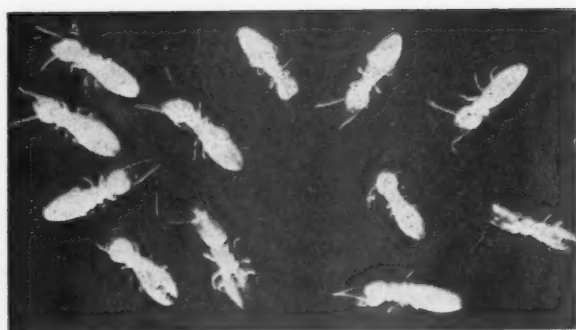
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*Basic research of the past decade has opened
avenues of investigation which indicate
a new era in pest control*

The Present Status of

PESTICIDES

By BERNARD E. CONLEY



The age old conflict between man and his environment has fostered many notable achievements, but one of the most promising is the use of pest control chemicals. New synthetic organic insecticides, rodenticides, herbicides, and insect repellents have made possible the control of a number of disease vectors and agricultural pests against which previous management methods were difficult or impractical. Immediate benefits in the form of improved crop production and in-

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creased freedom from pest annoyance have already been demonstrated in this country. Of equal significance is the pronounced effect which these materials are exhibiting in large scale field trials against insects and rodents of medical importance. Striking results have been recorded in aborting epidemics of typhus, plague and dengue fever among military and civilian personnel in occupied countries. Extensive malaria and yellow fever control programs here and abroad have reduced the incidence of infection and in one instance assisted in the complete elimination of the mosquito carrier. These and other spectacular accomplishments against insect and rodent vectors indicate the tremendous medical and economic potentialities of the new pesticidal agents.

SEARCH FOR NEW INSECTICIDES

The systematic search for better insecticides has been in progress for over eighty years but significant advances based on marked improvement over existing agents were slow to occur until the present decade. World War II with its demands for global warfare produced serious shortages of plant insecticides and certain metals essential to the manufacture of inorganic insect toxicants. These

shortages coupled with the prospect of sending allied troops to areas where bizarre and exotic infections are endemic, stimulated scientists to pool their knowledge and coordinate their investigations for the screening of synthetic compounds for possible insecticidal activity. The so-called selective insect poisons, DDT and benzene hexachloride are contributions of this program to insect control. Paralleling this screening program, methods were sought to conserve the available reserves of plant insecticides. This led to the introduction and use of organic compounds called synergists which enhance or potentiate the insecticide and facilitate its more economical use. Improvements in insect control were not limited to chemical measures. Additional notable advances include the development of the insecticidal or aerosol bomb, refinements in ground and aerial dispersal of insecticides, new individual and mass delousing technics, and more efficient and longer lasting types of insect repellents.

TYPES OF ORGANIC INSECTICIDES

Among the numerous synthetic organic chemicals studied and proposed for use as insecticides, three distinct types have found wide application; namely, chlorinated hydrocarbons, organic phosphates and piperonyl compounds.

The chlorinated hydrocarbons are the largest single group. It includes DDT and its analogues TDE (DDD) and methoxychlor,¹ benzene hexachloride and its *gamma* isomer lindane, chlor-dane, toxaphene, aldrin and dieldrin. As a group the chlorinated hydrocarbons are distinguished by their enduring qualities or persistence even after single applications. They are toxic to humans as well as to the insects against which they are used,

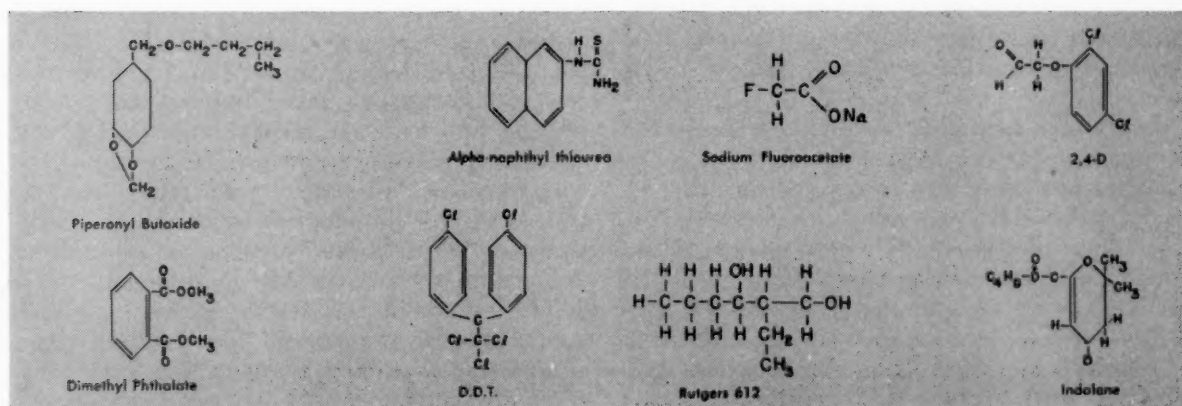
1. Although not a hydrocarbon because of its oxygen content, methoxychlor is grouped under this heading because of its close relationship to DDT.

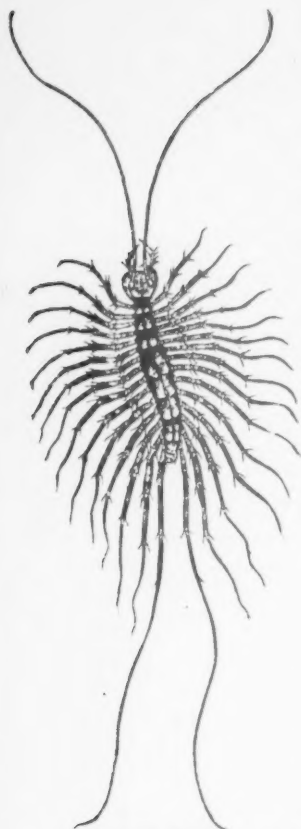


but less so than the organic phosphates. Individual members vary in this tendency to produce injury according to the type of exposure and other circumstances of use. The form in which dispersed (powder, emulsion, solution, as a mist or fog), the toxic nature of the solvents and other additives used to effect dispersal, and exposure factors such as use under confined conditions, with or without protective devices, and the frequency and duration of contact influence the degree of safety with which they may be used.

Organic phosphate derivatives are more recent innovations which were studied in Germany during the war as nicotine substitutes, and later made available to users in the United States. Hexaethyl-tetraphosphate, its American isolated active constituent, tetraethylpyrophosphate, and parathion are the more familiar members of this class. The organic phosphate insecticides are characterized by their extreme general toxicity. Because of this property they may not be used as freely as the chlorinated hydrocarbons; nevertheless, they are highly effective substances which control certain insects unaffected by the chlorinated compounds.

The piperonyl compounds differ from the preceding types in their comparatively low order of





toxicity and their general lack of insecticidal activity. They are used primarily as activators for pyrethrum, rotenone and certain other insecticidally potent materials to increase their speed of knockdown, initial kill and period of residual action. Chemically, these synergists are methylenedioxyphenyl derivatives. Synthetic members of the group include piperonyl butoxide, piperonyl cyclonene and *n*-propyl isome. Natural occurring compounds of this class are sesamin from sesame oil and piperine from pepper.

Plant insecticides, although somewhat neglected in the rush to develop synthetic compounds, are far from obsolete. Rotenone, pyrethrum, ryania and others are receiving attention proportionate

to the degree in which they are employed. The newer synthetics have gained supremacy in many fields formerly dominated by the plant products; however, pyrethrum and rotenone continue to be popular because of their wide margin of safety and superiority in certain control situations little affected by the synthetics.

RODENTICIDES

In common with other war-time research programs, the search for new mammal poisons was accelerated by the curtailment of imported materials used in compounding the bulk of the rodent poisons used in the United States and the need for improved agents for use in the field by our Armed Forces. Other methods of rodent control such as fumigation, trapping and rat-proofing were only partially adaptable to the military's needs for protection against rats and other rodents which transmitted disease, destroyed food supplies and damaged electrical and other types of essential equipment.

Several new synthetic rodenticides were studied during this period, two of which have subsequently found wide use as rodent poisons. *Alpha*-naphthylthiourea, commonly known as "ANTU" and sodium fluoroacetate, also known as "Compound 1080," are commercially available products of wartime research in this field. ANTU is a highly selective rat poison which is considered to be relatively safe for general use. It has been extensively used because it is readily acceptable

when incorporated into bait, it is stable to heat and light and it is easy and inexpensive to prepare. It, nevertheless, falls short of being a completely satisfactory rat poison because its selectivity limits its use to only one species of rat, and it predisposes to the development of resistance in sub-lethal doses. It also exhibits seasonal and sex variations in effectiveness, and it is dangerous to use where dogs, cats, hogs and baby chicks may have access to the bait. Unlike ANTU, sodium fluoroacetate (Compound 1080) is an unusually toxic and highly effective substance whose rapid action and minimal predisposition to tolerance has established its superiority to other known substances for rodent and predatory animal control work. Because of its extreme toxicity to most forms of animal life, including man, it is not recommended for sale to the general public under the manufacturers' sales agreement; it is available only to government units and certain individuals qualified by training or experience in rodent control procedures.

Other synthetic substances are under study as substitutes or supplements for currently used materials, several of which show promise of improvement. It must be remembered, however, that poisons are "last resort" measures, and, at best, should be only ancillary to such fundamental rodent control procedures as rat-proofing of buildings and the maintenance of high sanitation standards.

WEED CONTROL

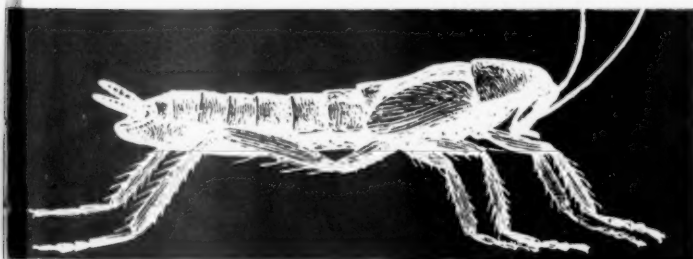
Weed control chemicals, particularly those possessing plant growth regulating properties, also have received attention during the war years. An outstanding development during this period was the utilization of plant hormones as selective herbicides. Synthetic plant growth regulators offer several distinct advantages over standard mechanical and chemical weed eradicators which employ crushing and conveyor equipment, smothering technics, flame throwers, non-selective contact chemicals, soil sterilizers and selective poisons. Certain of the newer synthetics, of which 2,4-D is representative, apparently have minimal hazardous properties for fish, animals and man, except towards a small number of humans sensitive to phenols and their chemical relatives. They are effective in small amounts, can be inexpensively transported and stored in powdered or concentrated emulsion form for subsequent dilution with water, and lend themselves to most methods of application without corroding equipment.

The sensitivity of certain plants to trace amounts of these chemicals remaining in spray equipment, or from fumes, drifting spray and residual quantities in the soil are disadvantages

which have been encountered in practice. The marked variation in susceptibility among weeds as well as cultivated species of plants is a further limitation which requires the judicious use of these materials. While not a panacea for all weed control problems, they have materially aided agricultural practice. For medical purposes, the value of hormone-type herbicides is more limited, although they have usefulness for the local control of unwanted vegetation which harbor insects, blister the skin, or produce undesirable types of pollen.

INSECT REPELLENTS

Insect repellents in the past were generally ineffectual mixtures of volative oils such as citronella, pennyroyal, eucalyptus and cedar alone or in combination with spirit of camphor and a suitable base which lowered the evaporating rate of the mixture. They gave variable protection, were often irritating to the eyes and sometimes to the skin, and, in general, cosmetically unacceptable to most users. During the war, government agencies investigated insect repellency as part of the general research program on insect control. A number of synthetic organic chemicals were synthesized which provided protection to the skin, and when impregnated into clothing, against a considerable number of disease-carrying and pestiferous types of insects. Several of the compounds, which conformed to the previously established standards for an acceptable insect repellent, have since been introduced on the market.



Dimethyl phthalate, *a, a*-dimethyl-*a*-carbutoxy-*g*-pyrone (Indalone), 2-ethyl-1,3-hexanediol (Rutgers 612) and dimethyl carbate, singly or in combination, have received extensive trial as skin repellents for flies and mosquitoes. The 6:2:2 mixture of dimethyl phthalate, Indalone and 2-ethyl-1,3-hexanediol, adopted and used by the army during the war, is an effective repellent against a wide number of insects. Butyl acetanilide, benzil and phenyl cyclohexanol have shown preliminary promise as tick repellents. Although these three chemicals are superior to benzyl benzoate and dimethyl phthalate in comparative field tests, the latter two compounds have been recommended as tick repellents for the present because of their

relative safety and general availability. Benzyl benzoate is an acceptable remedy for topical application for protection against chigger infestations commonly found in the United States.

These materials are not ideal insect repellents since their period of protection is variable depending on the species of insects against which they are used, the methods and circumstance of their use, and the type of formula in which they are dispensed. With the exception of benzyl benzoate, they are poisonous if accidentally ingested and all possess the common property of producing local irritation of various areas of the body under certain circumstances of use. With this same exception, they also possess solvent properties and should be kept away from plastic articles, rayons and certain other types of synthetic fibers, fingernail polish and varnished and painted surfaces. In spite of these obvious disadvantages they are the best available when this article was written, and they will continue to receive widespread use until several of the more promising repellents currently being studied are released for general distribution.

OTHER MEASURES

The full measure of usefulness of the newer pesticides in the fields of agriculture and hygiene is not yet determined. Medical and technological problems involving toxicologic considerations, the comparative value of different types of formulation and application, determination of the biting, breeding and sheltering habits of certain species of pests, the influence of climatic and environmental factors, and their relationship to well-founded agricultural and epidemiological practices need further study. In many instances, because of inherent physical and chemical shortcomings, the value of the newer pesticides may be confined to the role of invaluable adjuncts which supplement tried and proven control measures. The use of exclusion devices such as screening, rat-proofing and protective clothing, the elimination of breeding areas through drainage and the removal of weeds and brush, and sanitary measures insuring the adequate disposal of garbage, excreta and other wastes will continue to receive major emphasis. Drug prophylaxis and the more efficient types of older pesticides will continue to be used until experience testifies to their obsolescence.

Further prospects for better protection against pests of economic and medical importance are indeed encouraging. The basic research undertaken during the last decade has opened new avenues of investigation which indicate that we are on the threshold of a new era in pest control whose potentialities for good can only be predicted at the present time.



The PHARMACISTS' RELATIONSHIPS in the Hospital

By HANS S. HANSEN

I ALWAYS BECOME quite vexed and somewhat disturbed when hospital pharmacy is discussed in pharmaceutical circles and we are told it is not any different than any other pharmacy practice. But it is different and in so many ways; not the least of which is that it is practiced in a place where it affects so many different individuals and groups, their welfare and the duties they perform and, by the same token, the pharmacist and pharmacy are affected in turn. Let me clarify this a bit. It is not pharmacy *per se* that causes this but rather how you as a pharmacist in fitting your responsibilities into the whole affect the work and in turn the responsibilities of the others.

Hospital pharmacists should be more aware of this particular, or better, peculiar and important matter of relationship. I believe this was the first great difference I discovered when first entering the hospital pharmacy field after many years in other pharmacy work.

The hospital is a very complicated piece of machinery dedicated, as we all know, to the early return of a sick or injured individual to a useful economy. We might liken the various departments that go to make up a hospital as gears of the machine. When these gears mesh perfectly all goes well and you have a smooth running machine. But let something prevent a perfect meshing of gears, then we have trouble, at times serious enough to strip the gears and thus put the whole machine out of order. If these relationships that we are to discuss today are good they will act as oil on the machinery; if they are bad they will act as sand or grit.

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Now, I must encroach just a little upon the topic of "Human Relationships," because mine also concerns the problem of human beings and their behavior. I do not know upon what the science of personal relationship is based, but I would like to include as a text for my remarks as a basis of conduct in these relationships, chapter 7, verse 12, in the book of Matthew of the New Testament which reads, "Therefore all things whatsoever ye would that man should do to you, do ye even so to them; for this is the law and the prophets." Keep this in mind in all your relationships in the hospital and elsewhere as well.

I am going to cover only the relationships with other professional departments of the hospital plus those with the Business and Administrative Offices. While we read of and visit other hospitals we remember best personal experience. These come of course from our own hospital, so observations are tinged with it. Basically they are the same and these ideas can be fitted into most any hospital.

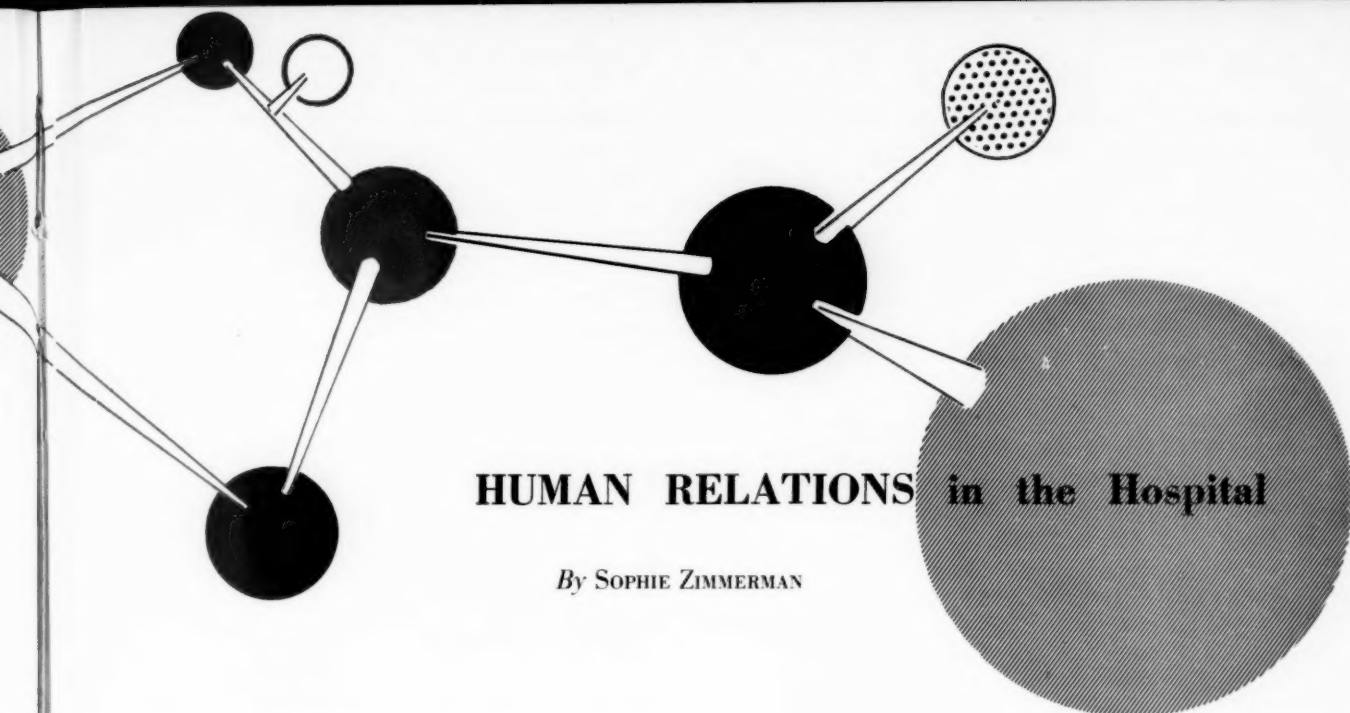
Primarily your professional efforts are for the welfare of the patient but you reach the patient through a second party. So all your efforts must be on a basis of good relationship with this party.

PROFESSIONAL DEPARTMENTS

First to be considered is the medical staff including residents and interns. These relationships should be friendly and on an equal professional basis if you are qualified to make them so. You should be the first individual they would come to for information on the dosage, action, etc. of all

(Continued on page 143)

Presented at the Fifth Institute on Hospital Pharmacy, Chicago, 1949.



HUMAN RELATIONS in the Hospital

By SOPHIE ZIMMERMAN

HUMAN relations are everyday processes that exist whether we are conscious of them or not. To develop positive and dynamic human relations takes effort and study, but brings satisfying results in the long run. Conscious planning by the department heads, supervisors, and management in developing and maintaining a happy and efficient work force is a real task that is a challenge to every one who deals with people.

In the case of pharmacists, it is both an asset and a liability that the infallibility of the profession is taken for granted. There is no room for mistakes. Your work is so specific, so technical that one wonders where an "extra" like human relations would fit in. In every relation where there are two or more people involved, the same principles apply for people to get the maximum enjoyment and efficiency in the daily work situations and associations.

An old formula would express the situation in "pharmaceutical" terms, $H = G/W$ or happiness equals what you get divided by what you want. Your background, education, and temperament determines what you want, but basically there are three major factors to be considered in arriving at happiness and adjustment. These are security, recognition, and expression.

Security includes not only economic security, but also emotional security; where a person has the feeling that the place he holds is his, in his own right and cannot be threatened by new arrivals, unexpected changes, or unfair criticism. He should know he is wanted. An insecure, worried employee cannot do his best and dreads

to face a new day in proportion to his insecurity. He takes it out on his fellow workers in many different ways.

Recognition is a strong motivating force. It is the feeling that one is acknowledged either by the group, the boss, or in a wider circle, depending on the amount of drive or mobility he has, upon his status in the organization. Very often the need for recognition is greater and more important than the financial aspect—mental wages. A simple illustration is the white collar worker who prefers a smaller salary to working in a factory or as a laborer, because of the status. In many cases, a need for recognition is expressed when a person goes into business for himself, not just for the profit (as it is frequently for less net gain), but for the recognition of being a businessman on his own.

Expression of opinions, ideas, and needs is necessary if a person, whether in a routine or supervisory job, is to feel a part of the hospital, not just a cog in a wheel. Avenues of expression must be kept open, the spark kindled. If one of his ideas is used, he has justifiable pride, greater interest in results, and very often the organization has gained in equal measure. It is not just an eight hour drag, as the saying goes, "back to the salt mines," but becomes the most interesting part of his day, if human relations are good.

Each person has his own hopes, dreams, and fears. As Burleigh Gardner, professor in the University of Chicago School of Business puts it: "A well adjusted situation in human relations exists when a person finds some balance between

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Presented at the Fifth Institute on Hospital Pharmacy, Chicago, 1949.

satisfactions he is seeking, between his demands and the expectations and the satisfactions the job provides."

Self development and development of others helps make the work more vital. A justifiable boast is: "I gave him his start." The helping hand is the best sign of good human relations, whether it is between two persons in the department, in the hospital, the community, or the country.

Very often it is impossible to offer advancement or the full satisfactions that a highly active or mobile person needs, and in such cases, a good supervisor or executive will develop an outlook beyond the routine operation of the job. Workers need self development and stimulation, and this can be obtained through numerous approaches. These could include institutes, seminars, classes at night, great book courses, college courses in their particular fields, or courses at vocational schools which will develop new hobbies or skills like wood crafts, photography, plastic work, dress designing, etc. These will give the employee a new outlook and an interest that ties in with his work or work group and makes pleasant associations with his work. Often several close friends or groups will take these classes together and make an evening of it, even include other members of their family and get further ties that bind and improve the human relations. Personal improvement makes for informed and alert personnel.

The kinds of human relations practiced are reflected in the spirit of the entire hospital or in the department, and the better kinds are developed through definite steps and by proven principles. Even if management knows what it wants, unless the supervisors and all who handle the people follow the prescribed pattern, the best results cannot be obtained. It is interesting to note that the situations which cause high morale or good human relations are consistent both in industry and in hospitals.

Last fall, at a Personnel Institute for Hospitals, held in New York, a part of the sessions was devoted to consideration of how to build morale and what causes poor morale. Through conference technic, where members of the institute formed groups of twenty, they pooled their experiences and through a conference leader, coordinated their information and listed the principles for good employee relations. It was shown that the same situations prevailed in all parts of the country and all size hospitals and the composite list of the factors which made good morale showed that good wages and hours alone were not enough to satisfy workers. A number of equally important aspects were found to govern human relations.

Working conditions which directly affect morale are: physical surroundings (good housekeeping), adequate working space, cheerful atmosphere, suitable lighting, and temperature.

Security in relation to safety, making certain the employee is not working under hazards, real or imaginary; equipment and materials and safety devices should be explained and understood so that he will not keep "at arm's length" from his work.

Fatigue factors. Seeing that flow of work is not too slow nor too strenuous over long periods of time; where the work load is well distributed and there is sufficient help, fatigue is less likely. Fatigue can often be illogical but true, but in all cases "fatigue so closes the avenue of approach within, that education does not educate, amusement does not amuse, nor recreation recreate," according to J. Goldmark.

Proper placement. Maximum satisfactions are only possible if the person is suitable to the work, and the job neither too much for him nor beneath his capabilities.

Orientation and training through proper induction into the organization and training on the job with classes, lectures, and demonstrations to supplement when necessary.

Recognition through title and status of the individual, as well as through equitable wages, and an understanding of promotional possibilities, so that the employee can enjoy the present and have an idea of his future.

Communications must be good. They may be implemented through memos and bulletin boards which tell employees in advance about changes which affect them; through house organs which provide means for recognition, expression, and education; through manuals which are a part of orientation and training; and through suggestion systems which allow for participation either within the department or the hospital as a whole.

Recreational facilities should be provided to the extent that there are adequate rest rooms and play rooms; periodic teas, picnics or social gatherings should be encouraged; glee clubs and sport teams organized; and hobbies of employees allowed expression through exhibits and shows. Such contacts bring about better unity, interest, and raise morale.

Follow-up all employees periodically, let them know how they are progressing, stimulate pride of accomplishment and help them feel a part of the organization.

These aspects of morale which were studied by the hospital group at the personnel institute were in many ways comparable to those found in industry. Dr. W. R. Sprengle wrote in his textbook, *Industrial Management*, about a similar

GOOD MORALE equals LOYALTY, COOPERATION, INTEREST, ENERGY, INITIATIVE

Avoid

1. Favoritism
2. Hasty or unwise decisions
3. Unfulfilled promises
4. Wage discriminations
5. Misfits or unfits
6. Jealousy, or situations which create jealousy through misunderstanding
7. Too many bosses
8. Display of authority
9. Belittling of managements' policy by a subexecutive

Develop

1. Square dealing with workers
2. Encourage the discouraged
3. Show personal interest in employees and their problems
4. Plan the work of the department
5. Keep tools and equipment in good working condition
6. Encourage suggestions from others
7. Maintain safe working conditions
8. Encourage cooperation by creating conditions that are conducive to it
9. Maintain equitable wage program
10. Maintain discipline
11. Issue clear adequate instructions

conference he attended several years ago. It was a meeting of 300 plant executives of a large automobile company. They too formed conference groups of twenty men and tabulated the principles influencing plant morale. Their answers were a result of many years experience of that group and expressed the factors that produce cooperation, or the will to do. Their results could be summed up as in the above table.

All these things add up to willing cooperation. As Mr. Ray E. Brown, superintendent of the University of Chicago Clinics once said: "Cooperation is simply a reflection of one's understanding of what is needed and why it is needed. Understanding is achieved through education."

For good human relations, a human approach to the problems is essential. Give the worker se-

curity and status in the work group and in the organization; have proper interaction up the line, orientation to the job and job satisfaction. Spot the sore spots, listen to the employee's sentiments and grievances, and do something about them where you can.

One might compare health and morale: lack of morale, like lack of health, cannot often be reduced to some one simple cause. Skillful diagnosis and understanding handling of the daily problems are needed.

These simple principles, compounded carefully, with understanding to fit the individual problem cannot help but result in good human relations. They have worked for others, they will work for you too.

Pharmacists' Relationships

(Continued from page 140)

drugs. You should take part in all their scientific meetings, qualify yourself so that it comes natural for them to include you in their deliberations. These scientific conferences are becoming a very important factor in the patients' welfare. Let me quote from Dr. Alan Gregg's *Kingsley Roberts Memorial Lecture* of last year: "The cleansing humility of the open Clinco-Pathological Conference has been considered, after long trial, to be more important to the practice of good medicine than the mystical therapeutic value of the physician building confidence by arranging his fee in private. The competent professional surveillance of the doctor's work has been taken as more generally valuable than the layman's freedom to

choose the best doctor among competitors for his custom." Yes, the pharmacist can make a place for himself in these conferences.

With the resident and interns of the medical staff there should be a teacher-student relationship, both on a formal and informal level.

The nursing staff usually takes over where the pharmacist stops in the distribution and use of medication. We should then have a relationship of cooperation and helpfulness with nurses. Plans for the simplification of your work should never be executed if in doing so you would increase the work of the nursing staff nor should you ever shift responsibility that is inherently yours to their shoulders. Then again, as with the medical staff, we have the relationship of teacher and student, on an informal level with the graduate nurse

and formal level with the student nurse. This, of course, only if there is a School of Nursing Education connected with the hospital. I believe the pharmacist is better fitted to teach therapeutics and pharmacology in the school than any other individual of the hospital staff. Before we leave the Nursing Department the service the pharmacist gives obstetrical and operating room patients is of a specialized nature. This makes for a different relationship with the nurse in charge than we have with a private duty, general duty and/or floor nurse.

With the Departments of Pathology, Radiology and Anesthesiology we have a professional relationship with the medical heads. In hospitals not so staffed we would have a somewhat different relationship with chief technicians of the department; probably more on an advisory basis. You could possibly also have the relationship of a supplier; as in many hospitals the Pharmacy Department supplies stains and test solutions to the Laboratory, developers and fixing solutions for the Radiology Department, anesthetic agents to the Department of Anesthesia.

In some hospitals the Outpatient Department is so set up that the pharmacist experiences a pharmacist-patient relationship; in other hospitals it might not be possible. I am not so sure that this pharmacist-patient relationship is of great importance to a hospital pharmacist. It adds nothing to his ability in the practice of hospital pharmacy.

ADMINISTRATIVE STAFF

With the Business Office we have an entirely different relationship. It is strictly a business relationship. There should be a cooperative alliance between the Pharmacy Department and the Business Office. The Business Office should take over where Pharmacy leaves off in the matter of financial records, etc.

The operation of hospitals is considered a business operation and, in the aggregate, big business; but it is a peculiar type of business. We hear quite frequently of late, "Let the hard-headed business man run the hospital and it wouldn't be in the red." This I believe, but I am also firmly convinced we would not have hospitals as we know them today. Can you imagine a hard headed business man investing hundreds of dollars in surgical instruments and other equipment that might only be used once or twice a year? No, when he discovers such a condition he would have these on the bargain counter in order to salvage as much as he could. Imagine the newspaper headlines should a patient expire in your hospital for want of a piece of equipment.

Within certain limits the Pharmacy Depart-

ment can and should operate on established and recognized business principles. It probably is the only revenue producing department in the hospital that can do so without jeopardizing the patients' welfare.

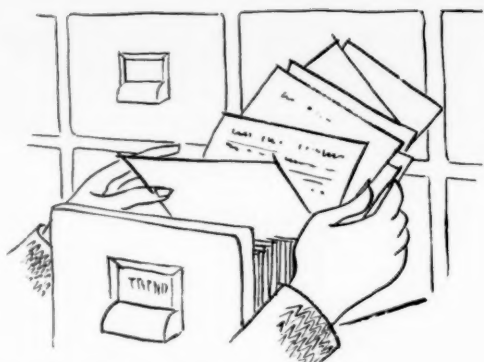
The relationship of the pharmacist to the administrator is one of responsibility and accountability. You are responsible for the growth and development of your department. Growth in the sense of strength and progress and development in evolving possibilities. This development of possibilities calls for an observation. Far too many individuals in all the various fields of endeavor lack this attribute. Basically it's a lack of imagination. These people approach each day's tour of duty satisfied to do just what they did yesterday and all the thousand yesterdays that have passed and will do the same on all the tomorrows that are to come. They have ceased growing mentally and spiritually. Let us see that the ranks of hospital pharmacists have few of these persons.

I also mentioned accountability. This word may be synonymous with responsibility, but a distinction can be made without splitting hairs. You are responsible to the administrator for your department in all that this responsibility implies, but you are accountable to him for certain definite acts, duties, and relationships. For example, you could be operating your Pharmacy efficiently, supplying all patients' and departmental wants and still be guilty of poor relationship which could result in a breakdown of the intricate machine, the hospital. Let me give you an example in point. Three or four years ago I had a letter from a hospital administrator which read something like this:

"I have a very good hospital pharmacist, he conducts his department well, supplies all the patients' wants, cooperates with the medical staff and all other departments except the Nursing Department. Here he has so restricted his service, especially with respect to distribution of sedatives and narcotics, that the Nursing Department's work has been doubled. He has limited the supply of narcotics to the nursing station so that it requires three and sometimes four trips to the Pharmacy a day in order to have a floor supply."

Here we have an example of what I mean by accountability. The pharmacist is here accountable to the administrator for a definite duty or obligation. He would not be accountable to the Nursing Department because it is not his superior in any sense of the word.

In summary we have the following relationships: (1) That of a professional colleague. (2) That of a teacher. (3) That of a business associate. (4) That of a responsibility and accountability. These should all be on a basis of cooperation for the benefit of the patient and the hospital's increased value to the community which it serves.



THERAPEUTIC TRENDS

New trends in medicine and pharmacy include
PROCAINE AMIDE—SURITAL SODIUM—VIO-
MYCIN—PYRIDINE IVY EXTRACT—PROCAINE
BASE—CHLORAMPHENICOL IN TYPHOID

PROCAINE AMIDE

Procaine amide, available for investigational use as Pronestyl from E. R. Squibb and Son, is being studied to determine its effect on arrhythmias in anesthetized man. Although diethylaminoethanol suppresses ventricular arrhythmias in conscious and anesthetized man, its usefulness is limited by the hypotensive effects and its relatively rapid transformation *in vivo*. In a search for a drug possessing the activity of procaine without its toxicity, various esters and amides of diethylaminoethanol were examined for stability in the body and the stable ones screened in dogs. Procaine amide was found to be the most promising compound studied to date. Advantages of this compound include the fact that it can be administered orally since gastrointestinal absorption is complete; it is not attacked by the plasma enzyme which hydrolyzes procaine; in man it is only slowly transformed and about 60 per cent is excreted unchanged in the urine; and plasma levels are sustained, declining only 10 to 15 per cent per hour. No untoward reactions were encountered except for an occasional moderate hypotension.

A report on this preliminary study appears in *J. Pharmacol. Exp. Therap.* 98:21 (January) 1950. Procaine amide (Pronestyl) for intravenous use has been supplied as a 10 per cent solution in 10 cc. ampules and for oral use in 0.25 Gm. capsules.

SURITAL SODIUM

Surital sodium as a new anesthetic for intravenous use has been studied on a series of 1200 patients and the results are reported in *Anesthesiology*, 11:33 (January) 1950.

Since none of the injectible barbituric acid derivatives in common use at the present time meet the requirements of an ideal anesthetic agent, it was decided to evaluate Surital sodium. This drug differs from Pentothal only in the substitution of an allyl group for the ethyl side chain. Chemically it is sodium 5-allyl-5-(1-methylbutyl)-2-thiobarbiturate.

The two methods of intravenous administration utilized in this study were intermittent injection of a concentrated solution and the con-

tinuous intravenous drip of a dilute solution. In the former, a 2 or 2.5 per cent and in the latter a 0.3 per cent solution was used. When 3 to 10 cc (60 to 250 mg.) of the 2.5 per cent solution was administered prior to inhalation anesthesia, a smooth, rapid induction followed.

Surital sodium was used in the induction of general anesthesia, for induction and endotracheal intubation, with regional anesthesia, for complete maintenance of anesthesia with nitrous oxide-oxygen, with curare, and in anticonvulsant therapy. The drug was often given rectally to children with favorable results.

While, it is stated, Surital sodium does not fulfill all the requirements of an ideal anesthetic drug, it may be superior to similar drugs in current use. The advantages noted include rapid awakening from a comparable plane of anesthesia, less frequent circulatory depression when used in equivalent doses, more rapid restitution of spontaneous breathing after large doses are given rapidly, and the more benign nature of laryngospasm with surital as compared with other barbiturates.

Surital sodium is available for investigational use from Parke, Davis and Company, Detroit.

VIOMYCIN

Viomycin is a new antibiotic which has shown ability to combat experimental tuberculosis. It is related to Terramycin and was also developed by research workers at Chas. Pfizer and Co. First reported at the recent Streptomycin Conference held in St. Louis under auspices of the Veterans Administration, Viomycin has also been tried on a limited scale in man, but its real therapeutic value has not been established. Its most important aspect is that it appears to be active against tuberculosis organisms which have become resistant to streptomycin as well as against those which are sensitive to the older antibiotic.

PYRIDINE EXTRACT FOR POISON IVY

Injections of aqueous alum precipitated pyridine ivy extract have given satisfactory results as a prophylactic measure for patients hypersensitive

to poison ivy. A report in the *J. Allergy* 21:55 (January) 1950, gives the results of prophylactic therapy using the extract on 113 patients. Used during the years 1945 through 1947, 77 per cent of the patients showed satisfactory results the first season of treatment. Of the patients treated for two consecutive years, 84 per cent had no poison ivy and of those treated for three years, 92 per cent showed no symptoms. Patch tests performed on 36 of the cases indicate that the pyridine ivy extract is only slightly less active than the alcoholic ivy extract in the production of positive tests.

Materials now available for treatment of sensitive individuals consists of a solution of the toxic phenol in a fat solvent or in oil, all of which have practical disadvantages in their employment. The solution extracted with pyridine may be given in larger, more rapidly increasing doses than the alcoholic extract because of the slow absorption of the pyridine preparation. It is also reported that pyridine extract is easy to use, produces no discomfort on injection and is stable.

The material is prepared by extracting the toxic phenols from poison ivy leaves with pyridine and then precipitating the solution by the addition of aqueous alum with or without an aqueous mineral acid. In appearance, the extract is a green flocculent precipitate suspended in physiologic saline.

No discomfort other than the needle is felt during injection. The suspension, even in the concentrated form, is of sufficiently low viscosity for use of a tuberculin syringe with a 26 gauge, $\frac{1}{4}$ inch needle. Syringe and needle are easily cleaned by washing with water.

The schedule of treatment consists of injections of 0.4 and 0.8 cc of a 1:50 dilution of pyridine ivy extract, then 0.2, 0.6, and 1 cc of a 1:5 dilution, given at five to seven-day intervals, followed by monthly injections of 1 cc of a 1:5 dilution.

CHLORAMPHENICOL FOR TYPHOID FEVER

Chloramphenicol (Chloromycetin, Parke, Davis and Co.) has been shown to be a valuable therapeutic agent in the treatment of typhoid fever. Report of an early study appears in the *J. Clin. Invest.* 29:87 (January) 1950. Use of aureomycin to treat four patients and polymyxin to treat five patients in the same study indicated that little value was obtained from these antibiotics.

Twenty-four patients with typhoid fever were treated with chloramphenicol with no fatalities. In one group consisting of 22 patients, therapy was begun within the first three weeks of illness, average 11.9 days, while the two members of the other group first received the drug during a relapse which occurred in the fifth and seventh week. The average duration of fever after the ini-

tial dose of drug was 3.5 days in the first group and 2.5 days in the second. The majority of the patients in the first group recovered without complications but two had intestinal hemorrhage, one had intestinal perforation, and four had clinical relapses. The group of 22 patients received, on the average, a total of 23.4 grams of drug given over 9.2 days. It should be noted that relapses developed in individuals who received less than the average course of therapy, and that they were readily controlled when drug was again administered.

PROLONGED LOCAL ANESTHESIA WITH PROCAINE BASE

Prolonged local anesthesia lasting two weeks or longer may be effected by the injection of an aqueous suspension of procaine base according to Monash writing in the *J. Investigative Dermatology*. 14:79 (February) 1950. Recalling that a water insoluble substance in aqueous suspension is more slowly absorbed after injection than an oily solution of the same substance, Monash applied the same principle with procaine as was used in 1941 to increase the duration of action of oil-soluble estrogens by suspending them in water.

A suspension of 0.1 gram of procaine base dispersed in 1.0 cc of water with the aid of a small amount of Aerosol OT, when injected subcutaneously into the anterior surface of the arm, produced complete local anesthesia almost immediately and persisted for 20 days. The injection was not painful. Slight local swelling took place but disappeared within a short time.

Using the same procedure, the injection of 0.05 gram of procaine base suspended in 1.0 cc of water produced local anesthesia which lasted 14 days.

Procaine base was also dissolved in dilute alcohol and injected. The alcohol was quickly absorbed leaving the water insoluble procaine base behind in the subcutaneous tissue. Local anesthesia lasting 16 days was produced by this method. To make the solution, procaine base was dissolved in 95 per cent alcohol and diluted with water to make a 5 per cent solution in 50 per cent alcohol. One cc of this solution, containing 0.05 gram of procaine base was injected subcutaneously. There was slight pain and swelling following injection. The pain subsided immediately, the swelling within an hour.

Procaine penicillin was studied to determine local anesthetic action. Procaine penicillin in aqueous suspension produces delayed local anesthesia; the oil suspension of procaine penicillin has no local anesthetic effect.

PHARMACY AND THERAPEUTICS

COMMITTEE

Edited by DON E. FRANCKE

Is it difficult for the hospital pharmacist in an open staff hospital to work with the Pharmacy and Therapeutics Committee and to develop a formulary? As is true of all important undertakings, there is a considerable amount of work involved, but the results of such activity return high dividends. Unfortunately, the great majority of articles on the Pharmacy and Therapeutics Committee and the hospital formulary have been written by individuals representing hospitals with closed staffs. This has led to the neglect of the viewpoint of those pharmacists practicing in the more prevalent open staff hospitals where the problems are somewhat different.

In an attempt to correct this situation and to illustrate that pharmacists in open staff hospitals can play an increasingly important part in their hospital organization, I have requested three pharmacists from open staff hospitals to outline for you the methods used in introducing the idea of a Pharmacy and Therapeutics Committee. These letters show some of the difficulties experienced and how they were overcome, as well as some of the accomplishments of the committee with an indication of the response of the medical staff to the work of the committee.

In the past, following a discussion of the Pharmacy and Therapeutics Committee, many pharmacists from open staff hospitals have said in effect, "those ideas may be practical for a closed staff hospital where the unit is more closely organized, but in an open staff hospital it is impossible to get the physicians interested or to obtain their cooperation." I believe the answers given in these letters illustrate very well what can be done. They certainly point the way toward greater responsibilities and importance of the hospital pharmacist.

The first letter was received from Mr. Charles Barnett, chief pharmacist of the 180 bed St. Luke's Hospital, Jacksonville, Florida.

From Charles Barnett

"I am glad to see you include a section on the Pharmacy and Therapeutics Committee in *THE BULLETIN*. We have just recently had such committee appointed in our hospital, which has an open staff of about 225 physicians and dentists. I thought you might be interested in knowing how we went about getting the committee appointed and some of the results.

First of all, I was sold on the idea at the Third Institute on Hospital Pharmacy held in Princeton,

N.J. in 1948. On my return home, I made a detailed report of the Institute to my administrator and mentioned the desirability of such a committee, especially in establishing a hospital formulary. He was interested, but at the time I was not well enough prepared to push the idea. I began by assembling information from *THE BULLETIN*, and from Hans Hansen, Tom Reamer, Sister M. Jeannette, you, and others. After I had better prepared my case, I felt that I was ready to pursue the matter further.

In June 1949, just one year after I first mentioned it to my administrator, I furnished him with a detailed report, pointing out the need and the advantages of the Pharmacy and Therapeutics Committee and a formulary to the hospital, the physicians and the patients. He was very much in favor of the committee and discussed the idea with some key men on the staff; they too were in favor.

At the July meeting of the executive staff, the administrator presented the report together with his endorsement. The president, on July 20th, appointed a committee to study the report. On July 25, the members of the committee were furnished with a copy of the report so they might study it and make their recommendations. All the members of the committee were present at the August 1 meeting, and the administrator offered his full support. At this meeting it was decided that a standardization program was desirable. At the meeting of the executive staff held on August 8, the committee recommended that a list of basic drugs be dispensed by the pharmacy on a trial basis, subject to approval at the regular general staff meeting to be held in October. The executive staff approved, and, a copy of the Special Committee's report along with the action of the executive staff was mailed on August 12 to each member of the medical staff, together with a letter from the administrator urging them to study the report for the October meeting.

On September 19 the Special Committee met again, reviewed the accomplishments, and recommended the continuance of the program of standardization of drugs stocked and dispensed in the Pharmacy. On October 11 the general medical staff met, with the largest attendance on record, and unanimously approved the continuance of the program of standardization and establishment of a Pharmacy and Therapeutics Committee, asking the personnel of the special committee to serve on this committee. The committee meets once each month to consider drugs for the formulary and to assist in the preparation of *The Pharmacy Bulletin*. It expects me to prepare a list of drugs for consideration. I prepare the list and get it to them a few days before the scheduled meeting. By this method, the committee can study the list at its convenience and be better prepared to make recom-

mentations. We publish our recommendations in *The Pharmacy Bulletin*, which is distributed at each staff meeting.

The medical staff has supported every recommendation and our administrator has co-operated with the committee in every way. He ordered for each member a copy of the *Formulary* used at University Hospital, Ann Arbor, Michigan. At each meeting of the committee dinner is served.

I do not know which was the most important point in selling the medical staff on the idea of a Pharmacy and Therapeutics Committee and the formulary. I built the groundwork by first pointing out that it was ethical. To support this claim I had a letter from Dr. Austin Smith, then secretary of the Council on Pharmacy and Chemistry, in which he said, "The Council does believe that a great deal can be gained from the use of a good hospital formulary." I had a copy of the statement of the Council on the subject, which was published in *The Journal of the American Medical Association*, December 2, 1933. Dr. Austin Smith mentioned, in *THE BULLETIN*, 6:124 (1949), the need for standardization of drug therapy in hospitals and the importance of the formulary in hospital practice. It was pointed out by the administrator that savings would be passed on to the patients.

Since the adoption of the formulary, we have been able to reduce our charges to patients on several items. In December alone we saved our patients \$1,073.15 as a result of this program.

Thus far, we have received full cooperation from the administrator, the executive staff, the general staff, the nursing staff, and the training school for nurses. Our program has been so well received by the medical profession here that two other hospitals in the city are now in the process of developing the same type of program.

However, in such a short time, we have not been able to adopt a complete formulary but we feel sure that in due time we shall have one. This program has taken many hours of my time, but I am glad that I did not become discouraged and give up. The result is gratifying."

Jane Rogan writes

From Mrs. Jane Rogan, chief pharmacist of the 185 bed Evangelical Deaconess Hospital, Detroit, came an outline of the procedure employed and results obtained working through the Pharmacy and Therapeutics Committee.

"We did establish a formulary in our open staff general hospital. However, it was done with the full realization that any formulary established in our institution would need to be used as a reference and guide only. Strict adherence to the formulary is almost impossible because we deal with private physicians who are free to make their selection of medication as they desire, according to their patient's needs.

Our first problem was to convince ourselves that a formulary was desirable. We therefore considered the possible effect of our action on the patients, the nursing staff, the physicians, the administration, and

the pharmacy. Considering the advantages to these groups, we convinced ourselves that a formulary would be of benefit to all concerned and we proceeded to introduce the idea of a formulary.

The matter was first broached to the administrator. It was indicated that it would be possible to provide our patients with more and better pharmaceutical service at lower cost by the use of a formulary. The lower cost, we argued, would be possible through purchasing formulary items in quantity with a resultant lower unit cost. Manufacture of formulary items, which today must be purchased in limited quantities, would further reduce the cost.

We were given approval to present the matter to the medical staff; however, our short talk on the matter at a staff meeting resulted only in comments on the merit of the idea. Influential men in several departments were therefore contacted personally and interest was evidenced when these men realized that stringent standardization was not the aim of the hospital formulary. It was possible in several weeks then to re-introduce the idea to the executive committee of the staff. With its unanimous consent, the task of developing the formulary was assigned to the then existent Pharmacy and Therapeutics Committee. That first committee was comprised of three staff members representing the medical, surgical and obstetrical services, the administrator as an ex-officio member, and the chief pharmacist as secretary.

A meeting of this committee disclosed that only two members had knowledge of the aims of the formulary and it was necessary to devote the whole of the first meeting to overcoming their reluctance to establishing a formulary. They pleaded lack of time to devote to doing research, and they feared that the medical staff would assume that a formulary meant a regimentation of drug therapy. When it was explained that each department would be asked to submit a list of drugs it considered essential and that any favorite therapy would not be discontinued abruptly but would still be available, they were amenable to an attempt.

In subsequent meetings of this committee, held usually at two week intervals, lists of drugs from the various departments were requested and upon their receipt were considered and duplications eliminated.

At this point in the work the annual staff election took place and new appointments were made to all committees. Upon our suggestion, the chief of staff appointed one very active advocate of the formulary; one member who was skeptical about its possibilities, and the third person was a new member of the medical department.

After a brief review of the work the previous committee had accomplished, this new committee commenced where the old had terminated. A format for the formulary was our next consideration. The previously submitted and corrected list of drugs was again reviewed and it was decided that as a beginning, six classes of therapeutic agents were to be recommended for inclusion. With the knowledge

that an exhaustive discussion of each of these agents was impracticable, only the description including the therapeutic indication, toxicity, dose, route of administration, and the preparations available, was to be discussed in the formulary. The preparation of the monographs was done by the pharmacy department, sections of the formulary being assigned to students for research.

The final choice of drugs for each of these categories was upon majority committee approval. Their selection was based upon several factors, in this order. Preference was given the drug if it was official. If the drug had definite therapeutic indications and was as yet unofficial, its toxicity, as determined by studies in our hospital or by reliable researchers, was considered evidence for admission. Drugs of unknown composition or mixtures of drugs were not admitted. Cost of the medication was the third factor. If the article were a proprietary and it was available under a non-proprietary name the latter was admitted. Lacking adequate storage facilities in the pharmacy, the committee also required that the selected drug be available from a source of supply which would give rapid service.

Having accumulated, at this time, the monographs of each drug to be placed in the formulary, it was then possible to discuss other necessary information to be included. Knowledge of the Harrison Narcotic Law and our state barbiturate law is required; therefore, since our hospital is a teaching institution, we did include a descriptive paragraph. The committee also suggested that with the increased emphasis on the metric system, a table of conversions be available. A paragraph on the fundamentals of prescription writing as well as a statement of the most convenient prescription sizes available, was a necessity. Although the formulary would encourage writing prescriptions in English, a page of Latin abbreviations with the English translations was inserted.

The publishing of the formulary was a difficult problem. We believe we solved it by having the completed text mimeographed on three-hole, 8½ by 11 paper. This size was most convenient for several reasons. A formulary was a new venture for the hospital staff and the Pharmacy; consequently, revisions could be made frequently, simply and inexpensively. Each nursing station already had available a loose-leaf notebook containing procedures on medical treatments. The addition of the formulary to this volume, we reasoned, would help establish a habit of reference to the formulary also.

Approval by the medical staff and the board of directors was necessary before distribution and acceptance of the formulary could be attained. Submission of the formulary, and its subsequent approval by the board of directors, was achieved by the administrator. The Pharmacy and Therapeutics Committee submitted the formulary to the medical staff for its rejection, comments, revision or approval. It was a great satisfaction, after this prodigious effort at compilation, to observe the enthusiastic attitude of approval.

The success of the formulary, however, would be

dependent on the extent of its function and the only method of determining this would be its result on pharmacy operation. Several tangible and encouraging results followed. A smaller inventory at the end of our first year of operation was observed as well as a substantial decrease in costs to our patients. Our turnover was increased and additional revenue was accrued through the greater use of all medications. We found that there were fewer errors in dosage and an increased consciousness of methods to mitigate or avoid side-effects or idiosyncrasies of medications. Interest by specialized departments was apparent by the large number of requests the Pharmacy received for information on new therapeutic agents.

Many times, during the year it took to compile the formulary, we were discouraged by expressions of hostility and doubt; however, we were convinced that the advantages were sufficiently important to warrant our continued efforts. In view of the successful accomplishments of our formulary, we are pleased that our perseverance brought fruition."

JANE L. ROGAN

In 1946, I requested Mr. Hans Hansen, then chief pharmacist but now administrator, of Grant Hospital, Chicago, to prepare an article on "Establishing a Formulary in an Open Staff Hospital." His reply, which was written four years ago, indicates that there was no difficulty in establishing a formulary but that it required initiative and intelligent activity on the part of the pharmacist to make it function.

Hans Hansen's letter

"I have in front of me the outline for that article on, "Establishing a Formulary." You know, the more I consider this the less I think of it as a subject for an article. You see, the mechanics of establishing a formulary are not difficult and not very interesting. You take U.S.P. and N.F. preparations plus the items that you have in stock and there you have your start. From this list will be deleted those items that the staff men have not used frequently enough to warrant their inclusion. There you have it. Not much material for an article, is it?

But to make it click, now, that is a different story. So why don't I tell you how we made ours function. Establishing a formulary was one of the projects on the program when I came to Grant Hospital, so a few months after my arrival we began. The staff was notified of the work and asked to submit items it wished included with those already in stock. This list was checked and several items omitted because of slow turnover. In its final form we had an alphabetical as well as a therapeutic listing, and a copy was placed at each nursing station and in the Central Service Room. Staff members were notified and informed that they were expected to confine themselves to items included in this list. After two years the formulary was considered a dismal failure. Pressure from one source or another was brought to bear and the physician requested and received most any

drug item that he asked for. In spite of this failure, I was convinced that the use of a formulary was not only practical but could be instrumental in making an economical saving for the hospital. It is just common sense that if you stock one vitamin B complex oral preparation at say, ten dollars a thousand and then are requested to add another at ten dollars, you are not going to dispense any more just because you have two. All you have accomplished is the addition of ten dollars to your inventory. There is not enough difference in any of the various formulas of B complex preparations to warrant more than two or possibly three in the inventory. This, of course, is true of many other items.

The problem then was to sell the staff members on the value of the formulary. I thought that perhaps this could be accomplished best through the Pharmacy Committee of the staff. We had such a committee, but it was not, nor had it ever been, very active. With the help of the president of the staff, I was successful in getting members on this committee who would back the Pharmacy Department in its program. The next committee appointed consisted of a member representing surgery, medicine, and obstetrics and gynecology. My job was to convince this committee that a formulary was practical and would be profitable to the hospital. The committee agreed and gave me whole-hearted support and has continued to do so. I felt that I should do some more missionary work on my own. In every group of men you will find that some are leaders

and others naturally follow these. The leaders were the ones whom I had to contact and convince. I did this, telling them the same story I had told the committee.

The Pharmacy Committee had several meetings devoted to the problem of inclusion and exclusion of items. This is quite an important point because you do not want to change the formulary immediately after issuance. The final list was arranged as before, therapeutically and alphabetically, and has been in use for about two years. That it has shown a saving is proven by the fact that the first year we did ten thousand dollars more business with the same inventory as before the formulary was used. During the first year only two new items were added to the formulary, and so far this year (which is about over) three items have been added. These items were added at the request of staff members. The member must submit to the Pharmacy Committee his request with reasons for inclusion. If this request is granted, we place the item on the approved list. Approval usually is granted if there is not an item on the list which will be just as satisfactory. Any new antibiotic or sulfonamide is included automatically when released in the formulary.

I am sure that when supplies become normal and it is not necessary to carry a six-months supply of some items, we can reduce our inventory to the lowest figure we have ever had, all due to the use of a formulary."

HANS S. HANSEN

A.Ph.A. Nominations for Officers

The Committee on Nominations presented the following list of nominations for the various offices of the American Pharmaceutical Association for the 1951-52 term. The list was unanimously approved by the House of Delegates and the members of the American Pharmaceutical Association will vote on this list by mail.

For President

Don E. Francke, Michigan
Hugh C. Muldoon, Pennsylvania
Mearl D. Pritchard, New York

For First Vice-President

Irl Brite, Arkansas
Joseph B. Burt, Nebraska
Arthur H. Einbeck, New Jersey

For Second Vice-President

Edward J. Ireland, Louisiana
Wilbur E. Powers, New Jersey
John McCartney, Michigan

For the Council (three to be elected)

Martin E. Adamo, Massachusetts
L. L. Eisentraut, Iowa
Forest J. Goodrich, Washington
Glenn L. Jenkins, Indiana
Harold C. Kinner, District of Columbia
Blaine Miller, Kansas
George A. Moulton, New Hampshire
W. Arthur Purdum, Maryland
Charles E. Wilson, Mississippi

Indiana Hospital Pharmacists to Meet

Announcement has been made by the officers and advisors of the Hospital Pharmacy Section of the Indiana Pharmaceutical Association in regard to a meeting to be held in conjunction with the annual state convention.

Plans for the Hospital Pharmacy Section program during the I. Ph. A. Convention, June 20, 21, and 22, include a business meeting at 8:30 A.M. on June 20, followed by a talk on the development of a manufacturing department in a hospital pharmacy, a Kodachrome showing of hospital pharmacies in Indiana, and participation in the professional session of the regular convention program of the same day.



TIMELY DRUGS

BANTHINE . . . a new anticholinergic drug for oral use in the control of the vagotonia and parasympathotonia of peptic ulcer, is available from G. D. Searle. It acts by reducing the commonly associated hypermotility and also it usually abolishes or reduces excess acidity. Chemically it is β -diethylaminoethyl xanthene-9-carboxylate methobromide. It is supplied in scored tablets of 50 mg. each in bottles of 100.

Initial dosage may be 50 or 100 mg. every six hours, day and night, with subsequent adjustment to the individual patient's needs and tolerance. In addition, the usual adjunctive measures of diet, rest and relaxation should be prescribed for at least the first few weeks of therapy. To control high night secretions, night doses should be taken six hours before the usual time of arising. Further, after the ulcer is healed, it is important that a maintenance dosage, approximately half of the therapeutic dosage, be continued to provide a reasonable assurance of nonrecurrence. No evidence of chronic toxicity has been observed in maintenance therapy covering a period of more than sixteen months.

Some dryness of the mouth, mild blurring of vision, slight difficulty of urination or gastric fullness may ensue; these symptoms usually decrease or disappear on continued medication but if they are severe, adjustment in dosage may be necessary. Severe reactions with Banthine have not been encountered.

CALADRYL LOTION . . . containing one per cent Benadryl hydrochloride in a calamine-lotion type vehicle, with camphor and glycerin, is available from Parke, Davis and Company. It is an effective means of combating many of the various types of itching and burning sensations experienced during the summer, such as those caused by sunburn, windburn, hives, poison ivy, poison oak, insect bites, bee stings, and minor skin irritations. Rashes, such as diaper rash, cosmetic rash, and prickly heat, offer other opportunities for its application. Caladryl Lotion is available in six-ounce bottles.

DODEX DROPS WITH FERROUS GLUCONATE . . . is a combination package of two 15 cc. vials, one containing B_{12} (10 micrograms per cc.), the other containing ferrous gluconate (218 mg. per cc.—the equivalent of 25 mg. of iron). This combination provides iron in a well-tolerated and readily utilizable form for patients who cannot tolerate iron compounds. It is also recommended for children. Available from Organon Inc.

EMPIRAL . . . is a sedative and analgesic tablet available from Burroughs Wellcome and Co. Containing phenobarbital, $\frac{1}{4}$ grain, acetophenetidin, $2\frac{1}{2}$ grains and acetylsalicylic acid, $3\frac{1}{2}$ grains, Empiral offers relief in a wide range of painful conditions and is especially indicated where the latter are associated with anxiety, tension and insomnia. It is prescribed for the relief of pain which interferes with rest and sleep and for allaying anxiety generated by pain itself. It facilitates lower barbiturate dosage and thereby minimizes after effects and tendency to habituation. Empiral is available in bottles of 100 and 1,000 tablets.

FENOXYDYNE COMPOUND . . . for treatment of the common cold, is a combination of acetophenetidin, caffeine and the antihistamine, fenoxdyne citrate. Dosage is one to two tablets every three or four hours for at least 48 hours, taken as soon as possible after onset of symptoms. Available from George A. Breon and Company.

FEOJECTIN . . . is a stable saccharated oxide of iron for intravenous injection. It is intended for use in those cases of iron deficiency anemia in which oral medication is relatively ineffective, is not well tolerated, or produces results too slowly. Feojectin is particularly indicated for: resistant hypochromic anemias; anemia in pregnancy; anemia in gastrointestinal diseases—where oral iron exacerbates symptoms such as diarrhea, e.g., ulcerative colitis, diverticulosis; anemia in me-

norrrhagia or metrorrhagia; anemia in bleeding hemorrhoids; anemia in nutritional deficiencies. Feojectin is available in 5 cc. ampules from Smith, Kline and French Laboratories.

* * *

LIPOGEST . . . is a new lipotropic agent composed of methionine, choline, and inositol. It acts to prohibit deposition of fat in the liver and to increase its removal, particularly in cirrhosis and related hepatic disorders. Capsules are supplied in bottles of 100, 500 and 1,000. Lipogest contains: choline dihydrogen citrate 200 mg., *dl*-methionine 85 mg., and inositol 43 mg. Available from George A. Breon and Company.

* * *

LIQUID TAKA-COMBEX . . . is a preparation for treating patients having faulty B-complex intake, particularly when associated with digestive disturbances. It is indicated in convalescence, restricted diets, anorexia, geriatric and pediatric nutrition, during pregnancy and lactation. Each 4 cc. of Liquid Taka-Combex contains: Taka-Diastase, 2½ grains; vitamin B₁, 2 mg.; vitamin B₂, 1 mg.; vitamin B₆, 0.5 mg.; pantothenic acid (as the sodium salt), 2 mg.; and nicotinamide, 5 mg. It is available from Parke, Davis and Co. in 16-ounce bottles.

* * *

PROCAINE PENICILLIN G AQUEOUS SUSPENSION . . . is the procaine salt of penicillin-G in an aqueous suspension for deep intramuscular injection now available from Schering Corporation. The 10 cc. multiple dose vials contain 300,000 units of procaine penicillin per cc.

NORMOCYTIN . . . a vitamin B₁₂ preparation for use in the treatment of pernicious anemia and other megaloblastic anemias, is a product of the Lederle Laboratories Division, American Cyanamid Company. Each cc. of Normocytin contains 30 micrograms of a concentrate of vitamins B_{12b} and B₁₂ prepared from the fermentation of *Streptomyces aureofaciens*, the mold which yields the antibiotic, aureomycin. It is available in packages of 1, 5, or 25 ampules of 1 cc. each.

An injection of a small amount of Normocytin will rapidly improve the character of the blood by increasing the red cells and hemoglobin, in most "large cell" anemias, but folic acid is also needed. In addition, adequate doses will prevent the degeneration of the spinal cord which frequently occurs in pernicious anemia. Vitamin B₁₂ is now believed unlikely to produce allergic reactions and is of great value to the pernicious anemia patient who is sensitive to injectible liver extract.

* * *

WYCILLIN 600 SUSPENSION . . . is Wyeth's double potency aqueous suspension containing 600,000 units procaine penicillin G per cc. Although specifically designed for antisyphilitic treatment in single daily doses, it is also recommended for severe or refractory gonorrhea, pneumonia, streptococcal pharyngitis and other serious penicillin-susceptible infections, when higher dosage is indicated. Wycillin 600 Suspension is supplied in 1 cc. Tubex, with a sterile needle, ready for instant use—no addition of diluent, no sterilization; no waste, only empty vial is discarded after injection.

Dr. Fischelis Appointed Pharmacist Director in P.H.S.

Dr. Robert P. Fischelis, secretary and general manager of the American Pharmaceutical Association, has recently been appointed pharmacist director in the Reserve Corps (Inactive) of the Public Health Service. He has held an inactive commission as senior pharmacist since 1945.

Radioactive Isotopes

A booklet entitled "Safe Handling of Radioactive Isotopes," is now available for 15c from the Superintendent of Documents, Washington 25, D.C. This pamphlet, sub-divided for ready reference, includes a tabulation of the properties of most of the principal radioisotopes.

Corrections

Jessie Lee Smith is assistant chief pharmacist at Duke Hospital, Durham, N.C. In the March-April issue of THIS PUBLICATION, Mrs. Lucy Kennedy Thorne, a member of the Duke Hospital Pharmacy staff, was incorrectly listed as assistant chief pharmacist.

The remuneration for pharmacy interns at Queen of Angels Hospital, Los Angeles, is \$140.00 per month for a 40 hour week. It was incorrectly stated in THIS PUBLICATION March-April, 1950, page 99, that the remuneration was \$1.30 per hour. Sister Mary Junilla is chief pharmacist at Queen of Angels Hospital.

CURRENT LITERATURE

Edited by SISTER MARY ETHELDREDA, *St. Mary's Hospital, Brooklyn, N.Y.*

AMERICAN PROFESSIONAL PHARMACIST

APRIL, 1950—"Ophthalmic Medication in Hospital Pharmacy Dispensing" by J. M. Yalon. Describes thoroughly three methods of preparing eye solutions, dependent upon the purpose intended: 1. Ophthalmic Medication for Ward Use; 2. Sterilization of Ophthalmic Solutions for Use in Eye-Surgery; and 3. Ophthalmic Medications for Outpatient Use. Two charts and complete lists of drugs to be used on eye trays are also included.

page 360

HOSPITALS

APRIL, 1950—"A Direct Expense Report for Departmental Costs" by A. C. Eglin, Jr., C.P.A. Presents a departmental direct expense report on a monthly basis. The position of the hospital pharmacy in relation to a unit cost is included.

page 73

HOSPITAL MANAGEMENT

MARCH, 1950—"The Basic Role of Drugs in Modern Therapy" by J. M. Hayman, Jr., M.D. Describes the transition of the use of drugs through the ages and the frequent difficult experimental and actual results *in vivo* of many discoveries.

page 90

APRIL, 1950—"The Development of New Pharmaceuticals" by William Burdell Baker. New Product development in the drug industry is completely outlined with emphasis on the "Department of Ideas."

page 82

"Controlling Late Charges" by F. James Doyle. Several methods used to correct this practice are described, based on replies from various administrators.

page 110

MODERN HOSPITAL

APRIL, 1950—"A Case History of Job Evaluation" by Stanley P. Farwell. Of interest to pharmacists

in that the Pharmacy Department has been used in the summary of Point Ratings.

page 81

"Evaluation of Curarizing Agents in Man" by K. R. Unna, et al. A treatise chiefly differentiating the effect of curarizing agents on the skeletal musculature and the persistence of these effects.

page 106

SOUTHERN HOSPITALS

MARCH, 1950—"On Compiling a Formulary." Differences, as well as different practices in hospitals, affect the nature of the hospital formulary. Some of the problems in establishing a formulary in southern hospitals are discussed.

page 50

MAY, 1950—"A Drug Room Versus a Pharmacy Department" by Melvin Stevens, business director, Lakeshore Hospital, New Orleans, La. In a paper presented at the October meeting of the Southeastern Society of Hospital Pharmacists in New Orleans, the author points out the advantages in establishing a Pharmacy Department over a drug room in a hospital. He concludes that regardless of the size of the hospital, a pharmacy is a necessity.

page 75

THE HOSPITAL PHARMACIST

(The Journal of the Canadian Society of Hospital Pharmacists.)

JANUARY-FEBRUARY, 1950—"Increased Efficiency and Economy in the Hospital Pharmacy" by W. Arthur Purdum. Opportunities for the hospital pharmacist to improve his efficiency and thereby reduce the operating cost of his pharmacy are covered. Suggestions include: rearrangement of fixtures, purchase of equipment, manufacture of parenteral solutions and use of labor-saving devices.

page 21

"The Medical Intern's Armamentarium" by Sister M. Ancilla. The hospital pharmacists role in teaching the medical intern.

page 35

the Veterans

Administration

PHARMACIST



Edited by EDDIE WOLFE, Mt. Alto Veterans Hospital, Washington, D.C.

This is the third in a series of three articles describing the functions of the three sections of the Pharmacy Division, Department of Medicine and Surgery, Central Office, Washington, D.C. Preceding articles described the Training and Technical Sections.

PHARMACY OPERATIONS SECTION IN VETERANS ADMINISTRATION

VERNON O. TRYGSTAD

If there is one particularly noticeable characteristic of the group of two hundred odd Veterans Administration medical activities, it probably is the variety and diversity of type, size, structure and patient population of these activities. This diversity, of course, is reflected in the operations of the pharmacies serving them.



Naturally, the wide variety of medical activities and pharmaceutical needs adds to the complexity of pharmacy operations. But it also makes them unusually interesting. Each station, though following a broad, general pattern, has its own special problems and peculiarities, and seldom is there a dull moment in planning for, developing and studying this far flung organization.

Veteran Administration hospitals are generally grouped into three classifications, General Medical and Surgical, Tuberculosis, and Neuro-psy-

chiatric. These vary in size from two hundred bed hospitals to 6,000 bed combined facilities. Pharmacy service is geared to fit each of these types, and operational problems will vary with the general nature of the hospital and the combination of specialties practiced within it. All medical services are represented in each type hospital, so that complete medical service is available although the hospital specializes in a certain type disease or disability.

In addition to hospitals, the Veterans Administration operates outpatient clinics in regional offices, and provides medical service in homes for aged veterans with service-connected disabilities. Complete pharmacy service is also provided in these types of activities.

Obviously, in this heterogeneous organization, a broad, general policy for all phases of pharmacy operations is a requirement. One policy and one standard of procedures must cover all elements of pharmacy operations and management, yet they must be flexible enough for application to all of the various sizes and types of activities located in every geographical area of the country.

The Pharmacy Operations Section is responsible for developing procedures, technics and standards for the efficient management and operation of pharmacies in all Veterans Administration activities. The field station pharmacist's guide on broad, general policy is a pharmacy section of a manual on all types of operation, developed in the Central Office. Special technics and procedural changes are relayed to the field through technical bulletins or circulars, which are published and distributed on a nation-wide basis, insuring uniformity of operations. Special situations and specific problems arising at individual stations, of course, are handled by direct correspondence with the activity, and whenever possible, through personal contact by representatives from the Central Office in Washington. The operation of pharmacies according to procedures prescribed by manuals, bulletins, directives and regulations may appear to be dull and cumbersome. Analyzed, however, they are merely a simple, uniform pattern to be followed by a large

VERNON O. TRYGSTAD is Chief of the Pharmacy Operations Section, Pharmacy Division, Veterans Administration, Washington, D.C. He received his B.S. Degree in Pharmacy from North Dakota Agricultural College in 1936. He entered government service in 1940 with the Treasury Department, Bureau of Narcotics. In 1946 he was appointed Chief Pharmacist of the former V.A. Branch Office located at St. Paul, Minnesota. Mr. Trygstad is a member of the U.S. Naval Reserve, and served on active duty in the Pacific during the war.

group of activities working toward a common goal. Plenty of leeway is left for individual initiative, planning, and resourcefulness on the part of the operating pharmacist. At the development level, every effort is made to make procedures as simple and workable as possible. A commonly asked question in this section is: "Is it practical?" Obviously to remain practical and workable, procedures are in almost a constant state of revision, keeping up with new developments and changing trends and needs. Frequently, some of the best suggestions for changes and new developments come from the operating pharmacists themselves. These suggestions are always welcomed and encouraged.

Just as in any individual hospital, the pharmacy service is closely related to other services, and any policies or procedures developed for pharmacy must be coordinated with them. This requires an even closer working relationship, in developing procedures on a nation-wide basis. Many operational functions may affect, or be affected by policies established for the Supply Service, Medical, Surgical, Dental and Nursing Services, Dietetics, Laboratory, Personnel, Finance and Medical Administration. Obviously, the closest working relationship and highest degree of coordination between Pharmacy and the many other services is essential for smooth operation and management.

The greatly increased patient loads which the Veterans Administration medical services have been required to care for since World War II are being handled largely by older hospitals, some new facilities as they become available, and in the case of many outpatient clinics, in rented office space. New hospitals are being built—several have been opened recently, and forty-two are in stages of construction. New buildings or additions are also being constructed at seven older hospitals.

The Pharmacy Operations Section is concerned with approving space design, fixtures and equipment for the pharmacies in these new hospitals and additions. These pharmacies will have the latest type of fixtures, and will be conveniently located for best service to patients and medical activities. Moreover, they will be designed with space allocated appropriate for the size and type hospital. The picture is often a little different in older hospitals—those built before the last war, and some acquired from the Army or Navy. Many hospitals are operating with patient loads beyond the capacity for which they were originally built. In many of these activities, pharmacies which were considered adequate at one time are crowded and fixtures are no longer suitable. Studies are being made of these facilities, and whenever possible, additional space is being found and

recommended for the pharmacies. Continuing studies are also being made of older fixtures and equipment. Considerable remodeling has been accomplished with efficient, up-to-date pharmacies resulting. Several other remodeling and modernizing projects are in planning stages. The Veterans Administration has developed standard pharmacy layouts for each size and type hospital, and drawings for space layout, fixtures and equipment are available to VA hospitals planning remodeling projects. It is anticipated that eventually all permanent VA hospitals will have modern, uniform fixtures and equipment insuring utmost efficiency of operations.

The Veterans Administration has a firm policy that pharmacies, when open, will be manned at all times by a registered pharmacist. A considerable number of hospitals and many smaller clinics, however, are normally operated by one or two pharmacists. During times of vacation, illness, unusually heavy workloads or other emergencies, these stations would be hard pressed for professional pharmacy help if provision were not made for these special occasions. To meet such situations, a "rotating pharmacist" service has been established. Twelve rotating pharmacists are assigned to regional offices as home stations, strategically located throughout the United States. In this way, a rotating pharmacist is always located within a few hundred miles or less of any hospital which may need assistance. Requests for rotating pharmacist services are forwarded to Washington by the station as the need arises. Orders are then dispatched by the Central Office to the most conveniently located rotating pharmacist, through the manager of his home station, and relief is on the way to the requesting station. Many of these assignments are scheduled to provide annual leave for the operating pharmacists. Quite frequently, though, emergencies arise in local stations, and a rotating pharmacist is detailed immediately, usually in time to avoid any interruption in the normal pharmacy service of the hospital or clinic. It is not unusual for the Central Office to receive emergency calls because of illness, hospitalization of the regular pharmacist, or death in a family, and to have a rotating pharmacist flown to the requesting station in a matter of hours.

Indoctrination of new pharmacists is another valuable service provided through rotating pharmacists. Ordinarily, as new hospitals are opened or vacancies in already established hospitals occur, positions are filled by transfer of qualified and experienced Veterans Administration pharmacists. This has a two-fold advantage. First, Veterans Administration benefits by having trained and experienced pharmacists from the beginning.

Secondly, it is a firm policy to offer promotions and advancement whenever possible to well qualified pharmacists by transfer to larger or newer activities. Occasionally, however, when on-duty pharmacists have not expressed an interest in transfer into a new activity or are otherwise not available, it becomes necessary to place pharmacists without previous VA experience in positions of responsibility. A pharmacist first entering on duty in a new VA hospital will usually find it strange, somewhat different from his previous experience, and may be unfamiliar with regulations, dispensing routine, requisitioning procedures, record keeping and the many details typical of a Veterans Administration hospital or clinic. Whenever possible, especially when a new employee without previous Veterans Administration experience is assigned as the only pharmacist, a rotating pharmacist will be detailed to work with him during an indoctrination period to help set up the pharmacy, begin operations, and get the new pharmacist off on the right foot.

Little need be said of the versatility required of rotating pharmacists. Diplomacy, next to actual professional skill, is a must in the many situations they encounter. These men must be thoroughly familiar with every type of VA pharmacy operation. They are ready on short notice for a cross country flight or a week-end drive to reach a relief assignment on time—often completing a detail at the end of a week and reporting on Monday morning a few miles, or several states away for the next assignment.

Perhaps most important among the responsibilities for Pharmacy Operations is the actual contact through personal visits with the pharmacies in field stations. The operating pharmacies are frequently the origin of policies and procedures developed for nation-wide adoption, and

are the proving ground for them after they are established. Supervisory visits to field stations were once commonly thought of as inspections. These visits now, however, are regarded more as consultations with the operating pharmacists and hospital management. They afford an opportunity to observe the application of established procedures, to insure compliance with regulations, and most important, to determine the needs of the stations and assist with their individual problems. Problems of personnel, supply, inter-service relations, dispensing procedure, fixtures and equipment, space allocation—all of these encountered in day-to-day operation, but difficult to determine or resolve by remote control, are brought out in these on-the-spot consultations. Thus an understanding and working relationship is built up, integrating all phases of pharmacy operation between the Central Office and the field.

Functions of the Pharmacy Operations Section discussed in this article are those which may be more or less specifically labeled operational. Actually, the Pharmacy Division of the Veterans Administration, headed by E. Burns Geiger, with Archie E. Millis as Assistant Chief, is a closely coordinated team in which more often than not, there are no distinguishable dividing lines. Obviously, successful pharmacy operations are dependent upon well trained pharmacists—a function of the Training Section. Certainly best medical care and pharmacy service will often depend upon newest advances in drug therapy—specialty of the Technical Section. And it is believed and is being proven that successful operation and management can be achieved by a closely coordinated Pharmacy Division with the best possible Pharmacy Service in Veterans Administration as its one objective.

Correction, St. Mary's Hospital Intern Program

In the March–April issue of *THIS PUBLICATION*, page 99, the remuneration of the hospital pharmacy internship program at St. Mary's Hospital, Brooklyn was incorrectly stated as "Voluntary service; full maintenance." At St. Mary's Hospital the remuneration for pharmacy interns is \$150 per month, one meal daily, and laundering of uniforms. The following is an announcement of the present pharmacy intern program at St. Mary's.

The St. Mary's Hospital of Brooklyn, New York offers a year internship of specialized training in Hospital Pharmacy to qualified graduates of accredited

Colleges of Pharmacy.

Basically, the schedule includes training in the four chief subdivisions:

1. Outpatient department dispensing
2. General dispensing laboratories
3. Manufacturing of non-sterile and parenteral medicaments
4. Hospital pharmacy administration and policy

Organized lecture periods are conducted by the chief pharmacist and personal attention is given to the theoretical aspects of the problems concerned in each division.

The stipend offered is \$150.00 per month. For further information write to Sister Mary Etheldreda, Chief Pharmacist.

as the president sees it

I. THOMAS REAMER

Duke Hospital, Durham, N.C.



The first issue of THE BULLETIN printing "As The President Sees It" was Volume 5, No. 1, January-February 1948 and the author was John Zugich. He wished to present a page or two with "no policy except to intersperse an opinion or two on occasion and to avoid any attempt at gravity." W. Arthur Purdum during his year as president continued the idea but limited his contribution to a single page. Herbert Flack really took advantage of his opportunity and increased his material to three pages but he finally simmered down to two pages and a change of picture from a handsome, young, energetic, and ambitious man to a picture showing how much he aged in office. Herb was also removed from the front of THE BULLETIN to a middle rear spot sandwiched between "Current Literature" and "A.S.H.P. Activities." We will continue to make changes during my year in the president's chair. Our Vice-President Bowles will have the opportunity to express his opinion in alternating issues of THE BULLETIN. Letters to the president will be a new feature on my page.

Letters:

Dear Mr. President:

Congratulations on new look of President's Page:

Robert Gary Reamer (Age: $1\frac{1}{12}$ yr.)

Richard Alan Reamer (Age: $3\frac{1}{4}$ yr.)

Thomas Davis Reamer (Age: $5\frac{3}{4}$ yr.)

The "New Look"

for

Robert

Richard

and

Thomas, Jr.



THE PRESIDENT'S PAGE

During the past three years Presidents Zugich, Purdum and Flack have presented a wide variety of excellent reading material to our membership. What is your reaction to this page? Drop me a penny postcard expressing your idea of the best type of copy. At the present moment I have a long list of paragraph headings. Several pages would be needed to tell you about the recent convention in Atlantic City. Every session was well attended, discussion had to be limited because of the enthusiasm of the members present, adequate space was provided so that 150 people could be seated, we had reason to be proud of our Hospital Pharmacy Exhibit which occupied the most prominent space in the lobby of the convention hotel. We were proud of our leader Herb Flack who can now look back on a year of real accomplishment. We were excited when it was announced that Don Francke was nominated for the presidency of the American Pharmaceutical Association and Dr. Arthur Purdum was nominated to represent hospital pharmacy on the Council of the American Pharmaceutical Association subject to the ballots which you will receive within the next 30 days.

The panel discussion on "Pricing Schedules for Medicaments for Ward, Semi-Private, Private and Outpatient Departments" with Dr. C. Rufus Rorem as moderator brought out many ideas which stimulated a real controversy. We need a better understanding of the basic philosophy regarding drug charges in hospitals. Personally, I do not believe it is fair to overload charges on drugs such as the antibiotics. Why should a department which represents less than 10 per cent of the total cost of hospitalization bring in almost 50 per cent of the total revenue and suffer the unjust criticism which naturally follows this procedure?

Well, the convention is now a pleasant memory—plans are being made for the coming year—committee assignments have been made—I am trying to readjust my scheduled routine so that time can be found for a busy year as your president.

SOUTHERN MEETING

The Southeastern Society of Hospital Pharmacists will meet in mid-October at Fontana Village in western North Carolina for its mid-year meeting. If any of you are planning a late vacation, this would be a wonderful opportunity to meet with a live-wire group of hospital people and also visit one of the real beauty spots in the Southland. Fontana Village, near huge Fontana Dam (reportedly the fourth largest dam in the world), is in the Great Smoky Mountains. Miss Johnnie Crotwell, located at Druid City Hospital, Tuscaloosa, Alabama, will be glad to furnish you with complete details.

HOSPITAL BUILDING PROGRAM

I would like to give you an idea of the tremendous increase of hospital beds in my Tar Heel area. The same type of building program is also being carried out in many sections of the country but I do believe that our expansion is a bit unusual.

Early this year a 40-bed State hospital for treating Cerebral Palsy patients was completed in Durham. During February of this year, ground was broken for the start of construction of a 500-bed Veterans Administration hospital located less than one mile from our 600-bed Duke Hospital. Two weeks ago, the citizens of Durham (population 70,000) voted approval of a \$3,000,000 bond issue to increase the size of Watts Hospital from 225 to 350 beds and Lincoln Hospital from 100 to 150 beds.

Twelve miles away in Chapel Hill, at the University of North Carolina, a 400-bed hospital is under construction at the present time as part of the teaching facility of their expansion from a two year medical school to a four year medical school.

Fifty miles away in Greensboro, North Carolina, a 300-bed \$5,000,000 hospital is under construction.

Fifteen miles away at Camp Butner our State is enlarging its mental hospital facilities.

The hospital construction program throughout our entire state is undergoing expansion on a large scale. There are at least twelve hospitals ranging in size from 125 to 150 beds under way at present.

When this building program is completed it is easy to visualize the impact that will be made on hospital pharmacy in North Carolina. We will have an opportunity to organize a North Carolina Chapter of the American Society of Hospital Pharmacists.

In the past we have been too few in number for such an organization. We have had too many *one-man* installations where it has been difficult for

the pharmacist to actively take a part in Society activities. Twenty years ago, when I came to Duke, *Time* magazine described Duke Hospital and University as the hospital and university that were "built in the woods" and the area in which it was located as "flat, sandy and down at the heel." Time as measured by the calendar and the clock is recording changes being made and *Time*, reporting as a magazine will be telling the world in the future about the great new Medical Center which has risen in the South.

PHILOSOPHY DEPARTMENT

Sir William Osler addressed a group of medical students many years ago and told them to "Consume your own smoke with an extra draught of hard work so that those about you will not be annoyed by the dust and soot of your complaints." He also told them to "Remember that we are here not to get out of life all that we can for ourselves, but to try to make the lives of others happier." I like the thoughts embraced by the above quotations and if you have a favorite quote—mail it in and if space permits and our editor approves—we will print it.

MINIMUM STANDARDS

I was invited as president-elect of our Society to appear before the Southeastern Hospital Conference of Administrators during the month of April at St. Petersburg, Florida. Speaking to such a group about our new standards was a real opportunity and I felt that a great deal was accomplished. When reprints of the standards were made available at the end of my talk, I observed that every administrator in the room came forward to receive his copy. Everyone knows that there is a real need for improvement in the hospital pharmacy facilities. It is much easier to measure the needs when the department is surveyed by a comparison with the standards as outlined by our Society. Do your part this year by telling the minimum standard story to your administrator, to the administrators in your area by speaking to them as a group whenever it is feasible to arrange such a meeting. Compare your pharmacy with the standards and see whether you pass the test. If not—do something about it—employ another registered pharmacist—outline clear-cut policies of administration—what about your physical plant?—do you accept the responsibilities as they are outlined?—if you have a Pharmacy and Therapeutics Committee, does it function? Think it over and act—but—ACT NOW.

Thomas Kramer
President

American Society of Hospital Pharmacists

THE 1950 CONVENTION



NEW OFFICERS: *Treasurer*, SISTER M. JEANETTE, Mary Immaculate Hospital, Jamaica, N.Y.; *Secretary*, GLORIA NIEMEYER, 2215 Constitution Ave., N.W., Washington, D.C.; *President*, I. THOMAS REAMER, Duke University Hospital, Durham, N.C.; *Vice-President*, GROVER C. BOWLES, Strong Memorial Hospital, Rochester, N.Y.

MEMBERS of the American Society of Hospital Pharmacists met in Atlantic City on May 1 and 2 for the Society's seventh annual meeting, with Mr. Herbert Flack presiding. Meeting in conjunction with the annual convention of the American Pharmaceutical Association, more than 100 hospital pharmacists, including delegates from local affiliated chapters, were in attendance. Society meetings, including the annual business sessions and presentation of papers, were held on Monday and Tuesday with the House of Delegates convening on Sunday evening. During the remainder of the week, those present had an opportunity to attend the General Sessions and House of Delegates of the A.Ph.A. as well as sectional meetings.

In the President's address, Mr. Flack commended the various officers and committee members, including the Subcommittee on Membership and Organization and many individual members and local chapters for outstanding contributions made during the past year. He also commented on Society activities made possible through cooperation with the Division of Hospital Pharmacy and urged continued support.

Highlighting the activities of the past year was announcement of approval of the Minimum Standard for Pharmacies in Hospitals by the A.S.H.P. and the A.Ph.A. The Standard, now being submitted to the various hospital accrediting agencies, will serve as a guide for providing adequate pharmaceutical service in the nation's hospitals. It was also reported that work has continued on the Proposed Minimum Standard for Pharmacy Internships.

Continued progress in the Division of Hospital Pharmacy was apparent from reports presented by Dr. Robert P. Fischelis, chairman of the Division's Policy Committee and by Mr. Don E. Francke, director of the Division. Announcement was made concerning proposals of the Policy Committee, making possible appointment of a part-time director of the Division and acceptance of advertising in *THE BULLETIN*. Specific projects being carried out by the Division were outlined as well as plans for future expansion of Division activities.

Reports from officers and committee chairmen showed marked progress during the past year. In

addition to approval of the Minimum Standard and progress in the Division activities, outstanding contributions to hospital pharmacy as reported by the officers and committee chairmen include: increased interest in organization of local affiliated chapters; improvement of the Society's publication; preparation of a syllabus to be used in teaching hospital pharmacy; work toward standardization of narcotic procedures in hospitals; a survey of the status of licensure of drug facilities in the various states; preliminary plans for developing a standard parenteral container for use in hospitals; and a suggested questionnaire to be sent to pharmacists in the government services.

Also a new constitution and by-laws as worked out by the committee during the past year was proposed and reviewed by the House of Delegates. When presented at the annual meeting, it was voted to refer the proposed constitution and by-laws to the membership for approval at the same time the annual election of officers is held.

Complete reports of A.S.H.P. officers and committee chairman will be published in the July-August issue of THE BULLETIN.

HOUSE OF DELEGATES MEETS

Ten local affiliated chapters of the A.S.H.P. were represented at the second annual meeting of the House of Delegates held on Sunday evening prior to the business sessions on Monday and Tuesday. Organized at the 1949 convention, this group, which includes the Executive Committee members and representatives from local chapters, considers matters of importance to the Society and elects the secretary annually.

The annual breakfast was held on Tuesday* morning with Mr. I. Thomas Reamer, president-elect, presiding. At this informal meeting, those attending were introduced and Mr. Reamer briefly outlined some of the plans for the Society during the coming year.

Awards given for outstanding contributions toward the Society's membership activities were presented at the breakfast by Mr. Walter Frazier, chairman of the Committee on Membership and Organization. The award to the individual who contributed the most toward membership activities went to Sister M. Raphael Hilger, Sioux City, Ia. The award to the local chapter making the greatest contribution went to the Northern California Chapter of the American Society of Hospital Pharmacists, and was accepted by Dr. Charles Schwartz, a former member of the Northern California Society.

Resolutions passed by the Society at this annual meeting are as follows:

Whereas, the Society is greatly indebted to the Council of the American Pharmaceutical Association for its splendid support of the many programs involving the interest of hospital pharmacists, and

Whereas, it is the desire of the Society to convey to the A.Ph.A. an expression of this appreciation, be it

Resolved, that the American Society of Hospital Pharmacists express its appreciation to the Council of the American Pharmaceutical Association for its continued support of hospital pharmacy, and

Be it further resolved, that the Secretary of the Society be instructed to transmit a copy of this Resolution to the Council.

* * *

Whereas, the Society feels that it is of the utmost importance that unity exists among all branches of the profession, and

Whereas, it is noted that members of certain local chapters are not members of the American Pharmaceutical Association and the American Society of Hospital Pharmacists, be it

Resolved, that the American Society of Hospital Pharmacists urge all members of affiliated chapters to become members of the American Pharmaceutical Association and the American Society of Hospital Pharmacists, and

Be it further resolved, that the Secretary of the Society be instructed to so notify all affiliated chapters of this action by an appropriate letter.

* * *

Whereas, the Society is greatly indebted to the various individuals and committees who have contributed so much toward the establishment, approval and implementation of the Minimum Standard for Pharmacies in Hospitals, and

Whereas, the Society wishes to make known its expression of appreciation to these individuals and committees, be it

Resolved, that the American Society of Hospital Pharmacists commend the various committees and individuals who have contributed toward the establishment, approval, and implementation of the Minimum Standard for Pharmacies in Hospitals, and

Be it further resolved, that the secretary of the Society be instructed to transmit a copy of this resolution to each of the individuals and committees included in the above resolution, notifying them of this action and the Society's appreciation for their splendid services.

Whereas, it is felt by many members of the Society and teachers of courses in hospital pharmacy in the accredited schools of pharmacy, that no means now exists for the proper exchange of ideas relative to the subject content of such courses, and

Whereas, it is the consensus of teachers of such subjects and hospital pharmacists, that a discussion of such matters at such a conference would materially aid teachers of hospital pharmacy subjects in preparing and presenting such subjects, be it

Resolved by the members of the American Society of Hospital Pharmacists, that the Society approve the holding of an annual joint conference between teachers of formal hospital pharmacy courses in accredited schools of pharmacy and the officers and officers-elect of the A.S.H.P., the members of the Committee on Minimum Standards and the director of the Division of Hospital Pharmacy,

said meeting to be held during the week of the annual A.Ph.A. convention, the time and place to be announced in the printed program of the annual meeting of the A.Ph.A. and affiliated organizations. The purpose of said meeting being to discuss the content of hospital pharmacy courses as they are being taught and to offer constructive suggestions, if possible, regarding improvements that could be made in the presentation of the subject material in order for the profession to better provide adequate pharmaceutical instruction for this specialty of the profession which is ever growing in community and national importance, and,

Be it further resolved that this resolution, if adopted, be transmitted by the secretary of the Society to the secretary of the Conference of Teachers of Pharmacy, requesting consideration of this resolution at their next annual meeting.

NEW OFFICERS INSTALLED

New officers installed during the final session included: President I. Thomas Reamer, Duke University Hospital, Durham, N.C.; Vice-President Grover C. Bowles, Strong Memorial Hospital, Rochester, N.Y.; Secretary Gloria Niemeyer, 2215 Constitution Ave., N.W., Washington, D.C.; and Treasurer Sister Mary Jeanette, Mary Immaculate Hospital, 152-11 89th Ave., Jamaica 2, N.Y.



Presentation of gavel at installation of President I. Thomas Reamer by Past-President Herbert L. Flack.

Nominations for officers for the 1951-1952 term, to be elected by mail ballot, were announced as follows:

For President: Charlie B. Barnett, St. Luke's Hospital, Jacksonville, Fla. and Walter M. Frazier, Springfield City Hospital, Springfield, Ohio.

For Vice-President: Jane L. Rogan, Evangelical Deaconess Hospital, Detroit, Mich. and Charles G. Towne, V.A. Regional Office, Los Angeles, Calif.

For Treasurer: Sister Mary Donatus, St. Clare's Hospital, New York City and Sister M. Raphael Hilger, Sioux City, Ia.

PAPERS PRESENTED

"The Development and Use of Isotopes in Medicines" was the title of a paper presented by Dr. John E. Christian, coordinator of Bio-Nuclear Research at Purdue University. Since radioactive isotopes are now well established as therapeutic and diagnostic agents in a number of hospitals, Dr. Christian pointed out the need for dissemination of practical information concerning these materials to the hospital pharmacist.

Participants in a round table discussion on "Pricing Policies For Medicinals In Hospitals" included Mr. Herbert Flack, Mrs. Anna Thiel, Mr. Grover C. Bowles and Sister Mary Etheldreda with Dr. C. Rufus Rorem, executive secretary, Hospital Council of Philadelphia, as moderator. Each member of the panel presented a specific method for pricing medicinals, and such questions as mark-up for administering medicines, a satisfactory average mark-up for pricing all types of prescriptions, and what a reasonable average inventory is, were discussed.

Viewpoints of an administrator and a pharmacist in regard to expectations of each in providing pharmaceutical service in hospitals, were presented by a hospital administrator, Dr. Robert R. Cadmus, University Hospitals, Cleveland and by a hospital pharmacist, Mr. William Slabodnick, Massillon City Hospital, Massillon, Ohio. Each pointed out the responsibilities to the other, Mr. Slabodnick emphasizing that the hospital pharmacist expects the following from his administrator: understanding, coupled with interest and good will, cooperation to provide financial backing or investment in physical facilities and equipment, and to act as his coordinator with the Board of Trustees and medical and nursing staffs.

Experimental work in preparing a stable solution of *para*-aminosalicylic acid was presented by H. Altbach and C. Hurwitz, chief pharmacist and bacteriologist, Streptomycin Research Laboratory, respectively, VA Hospital, Staten Island, N.Y. It was found that a 20 per cent sodium PAS solution prepared by reacting PAS with C.P. sodium bicarbonate in a ratio of 100/56 can be kept for at least two weeks in a refrigerator at 4 degrees C. with negligible decomposition.

Other papers presented included: "Dermatological Vehicles" by E. E. Leuallen, D. Sc., Columbia University School of Pharmacy, New York City; "Disinfection and Antisepsis: Trends and Ideas" by Emil G. Klarmann, D. Sc., vice-president, Lehn and Fink, Inc., Bloomfield, N.J.; and "Behind the Scenes in Penicillin Research and Development" by Raymond Rettew, director, Penicillin Laboratories, Wyeth, Inc., West Chester, Pa.

NEWS ITEMS

A.S.H.P. Accepted as Member of Pharmacopoeial Convention

At the recent decennial meeting of the U.S. Pharmacopoeial Convention, a proposal to amend the Constitution of the U.S.P. Convention providing for membership of the American Society of Hospital Pharmacists, was introduced and voted upon favorably. Accordingly, the A.S.H.P. will be now represented by an accredited delegate at future pharmacopoeial conventions. The proposal was based upon the fact that hospital pharmacy is of a specialized nature and therefore could make a contribution to the development of the Pharmacopoeia in an area heretofore not represented in the membership of the convention.

Resolutions Passed by A.Ph.A. at Convention

Among the resolutions passed by the A.Ph.A. in session at Atlantic City, were several pertaining to the practice of pharmacy in hospitals. These included the following: (1) require all hospital pharmacies to obtain a pharmacy permit and to require that the pharmaceutical services in hospitals be under the personal and immediate supervision of a registered pharmacist; (2) recommend that registered pharmacists refuse to make their services available to any institution or employers not having a valid part in legitimate pharmacy and customary drug distribution so as to assist in the curtailment of physician-owned clinic pharmacies and other monopolistic intrusions into the field of pharmacy; (3) vigorously condemn as highly dangerous to the public welfare the dispensing of drugs and medicines by nurses, office girls and clerical employees in physicians' offices and other places where competent pharmaceutical services are required; and (4) recommend to manufacturers of specialty products that the basic ingredient be made available for compounding and dispensing by the practicing pharmacist.

It was also voted to urge voluntary health and hospitalization agencies such as the Blue Shield to revise their policy coverage so as to provide a place for pharmacists and retail drug stores which will enable them to render their traditional professional public health services to the sick and which will insure responsible professional supervision of the dispensing of drugs, medicines and medical supplies.

The Association also passed a resolution paying tribute to the Division of Hospital Facilities of the United States Public Health Service for the contribution they are making in the plans being developed for pharmacies in hospitals.

Internship Offered

Sister Mary Donatus, chief pharmacist at St. Clare's Hospital in New York City has recently announced inauguration of a non-academic formal internship program at St. Clare's Hospital. Interns will be paid \$125 a month. St. Clare's Hospital is a 425 bed general hospital with an active outpatient department. Persons interested in this program should write to Sister Mary Donatus, Chief Pharmacist, St. Clare's Hospital, 415 W. 51st St., New York 19, N.Y.

Upper New York Hospital Pharmacists Organize

On March 18, 1950, at the Hotel Wellington in Albany, N.Y., a group of 22 hospital pharmacists of Albany and surrounding area met at a dinner meeting to organize a local chapter of the American Society of Hospital Pharmacists.

Dr. Francis J. O'Brien, dean of the Albany College of Pharmacy was introduced by Mr. W. M. Hartmann of Ellis Hospital, Schenectady, N.Y. Dr. O'Brien stressed the importance of keeping abreast of changes in medication which take place after the completion of formal training. He expressed the need of adequate pharmacy staffs in the hospitals throughout the country.

Mr. Hartmann then introduced Mr. G. C. Bowles, chief pharmacist of Strong Memorial Hospital, Rochester, N.Y., who spoke on the history of the American Society of Hospital Pharmacists and the advantages of belonging to such an organization.

Mr. Hartmann then asked Dr. O'Brien to act as temporary chairman for the nomination of officers. The following officers were elected: President, Walter M. Hartmann, Ellis Hospital, Schenectady, N.Y.; Vice-President, Lucy M. Manvel, Leonard Hospital, Troy, N.Y.; Secretary, Sister Mary Eugenia, St. Peter's Hospital, Albany, N.Y.; and Treasurer, Gertrude Jatowsky, St. Mary's Hospital, Amsterdam, N.Y.

Frank J. Steele Honored

Frank J. Steele, Ph.G., M.Sc., chief pharmacist at the Greenwich Hospital, Greenwich, Conn., was recently elected vice-president and a member of the Board of Trustees at Stamford University, Stamford, Conn.

Mr. Steele lectures in general college chemistry at the University's night school.



A.S.H.P. AFFILIATES

Approximately 60 members and guests attended the March meeting of the **Hospital Pharmacists Association of Greater St. Louis**, held at the Sheraton Hotel. The program was in charge of Vernon Reiger, District Manager of Lederle Laboratories. Mr. Reiger presented Dr. Boyer who discussed current research problems and new drug products.

The April 11 meeting of the Greater St. Louis Chapter was also held at the Sheraton Hotel. Annual reports were presented and new officers elected as follows: President Lyndal Bloome; Vice-President Anne H. Gestrich, Barnes Hospital, St. Louis; Secretary Richard F. Bolte, U. S. Marine Hospital, Kirkwood; and Treasurer Frieda J. Ziegler, Evangelical Deaconess Hospital, St. Louis.

It was reported that Mr. Rudi has prepared a directory of hospital pharmacists in the St. Louis Area. The program included a movie presented by a representative of the Ciba Pharmaceutical Company.

The **Arizona Society of Hospital Pharmacists** has been accepted as an affiliated chapter of the national organization. The constitution and by-laws were approved at a meeting held in Tucson on April 16. Officers elected to serve during the ensuing year include: President Eli Schlossberg, Arizona State Hospital, Phoenix; Vice-President David Axelrod, St. Monica's Hospital, Phoenix; Secretary Mrs. William Brewer, St. Mary's Hospital, Tucson; and Treasurer Sister Elizabeth Joseph, St. Mary's Hospital, Tucson.

"Evaluation of Drug Pricing Systems in Hospitals" was the subject of a round table discussion at the April 11 meeting of the **Illinois Chapter of the A.S.H.P.** Participants in the discussion included: Mrs. Mabel L. Kettering, Billings Hospital, Chicago; Mr. Malcolm L. Hutton, Presbyterian Hospital, Oak Park; Mr. S. W. Morrison, Wesley Hospital, Oak Park; and Mr. Louis Gdalan, Michael Reese Hospital, Chicago.

Meeting in conjunction with the Southeastern Hospital Conference, the **Southeastern Society of Hospital Pharmacists** held its semi-annual meeting on April 6 and 7 in St. Petersburg, Fla. Mr. I. Thomas Reamer, president of the A.S.H.P. discussed the Proposed Minimum Standard for Pharmacies in Hospitals at the section for hospital administrators.

With Mr. Albert P. Lauve, president of the Southeastern Society, presiding, an outstanding program was presented. Greetings from the Southeastern Hospital Conference were brought by Mrs. Jewell W. Thrasher, Frazier-Ellis Hospital, Dothan, Ala. Papers presented on the Society's sectional program included: "What An Administrator Should Know about Hospital Pharmacy," by Dr. Charles G. Hillman, director, Jackson Memorial Hospital, Miami, Fla.; "Recent Advances in Dermatology of Interest to the Pharmacist," by Dr. C. Lee Huyck, director, Howard College of Pharmacy, Birmingham, Ala.; "Various Drugs Used in Anesthesia," by Dr. Lewis H. Wright, associate director, E. R. Squibb & Sons, New York, N.Y.; "Development and Uses of a New Antispasmodic—Artane," by Dr. John Browning, director of Professional Service, Lederle Laboratories, New York, N.Y.; "A Comparison between Pharmacy in the Navy and Civilian Life," by Mr. Lewis Bevis, chief pharmacist, Tallahassee Memorial Hospital, Tallahassee, Fla.; "Professional Relations and the Florida Formulary," by Mr. Charles C. Haupt, associate director, Bureau of Professional Relations, College of Pharmacy, University of Florida, Gainesville, Fla.; and "The Role of the Pharmacist in the National Hospital Program," by Mr. Alex Milne, Division of Hospital Facilities, U.S. Public Health Service, Washington, D.C.

A panel discussion on pertinent questions of interest to hospital pharmacists was also included in the program. Participants included: C. J. Vance, Birmingham, Ala.; Anna Thiel, Miami, Fla.; Charles Barnett, Jacksonville, Fla.; Malcolm Claus, New Orleans, La.; and I. T. Reamer, Durham, N.C.

Plans were made to hold the mid-year meeting of the Southeastern Society at Fontana Village, N.C. The program will be in charge of Miss Johnnie Crotwell, Mr. Ernest Rollins and Mr. Hy Africk. Nominees for officers to be elected by mail ballot are as follows:

For President—Mrs. Lillian Price, Emory University Hospital, Emory University, Ga. and Mr. M. Nevils, Lady of Lake Hospital, Baton Rouge, La.
For Vice-President—Mr. E. W. Rollins, Baptist Hospital, Winston-Salem, N.C. and Mary Wernersbach, Mount Sinai Hospital, Miami, Fla.

For Secretary-Treasurer—Miss Johnnie M. Crot-

well, Druid City Hospital, Tuscaloosa, Ala. and Miss Vivian Cato, Georgia Baptist Hospital, Atlanta, Ga.

The Michigan Society of Hospital Pharmacists met for a professional program and a business meeting on March 23 at the Alexander Blain Hospital in Detroit. Mr. Ralph Adam, Rutgers University, spoke on "Clotting Mechanism and The Use of Anti-Coagulants."

Mr. Richard Highsmith, administrator of Children's Hospital, East Bay, was the speaker at the April 11 meeting of the **Northern California Society of Hospital Pharmacists**. He discussed "Relation of the Administrator to the Hospital Pharmacist."

During the business session certain changes were proposed for the Northern California Chapter's constitution and by-laws. Among these were deletion of the one-year on-job requirements for new members; addition of the post of editor of *The Hospital Pharmacist* to the Executive Committee, and establishment of the name of this publication as *The Hospital Pharmacist*.

Dr. Charles Schwartz was named delegate to the A.S.H.P. House of Delegates.

The New Jersey Society of Hospital Pharmacists met at Mercer Hospital in Trenton on April 20 for a session on new professional developments and technics. Included also on the program was a tour of Mercer Hospital, where Mr. Eugene Friedman is chief pharmacist. Participants in the program included Mr. Wilbur E. Powers, secretary of the State Board of Pharmacy, and John J. Debus, Executive Office of the New Jersey Pharmaceutical Association.

The Texas Society of Hospital Pharmacists met at the University of Texas School of Pharmacy for its second annual Hospital Pharmacy Seminar on May 22 and 23. Included on the program were discussions covering hospital administration, manufacturing pharmacy, the proposed Minimum Standard for Pharmacies in Hospitals and other subjects of pertinent interest to hospital pharmacists.

Local chapters of the A.S.H.P. recently accepted as affiliates of the national organization include **The Connecticut Society of Hospital Pharmacists**, **The Arizona Society of Hospital Pharmacists**, and **The Hospital Pharmacists of the Puget Sound Area**.

Members of the **Akron Area Society of Hospital Pharmacists** met at St. Elizabeth Hospital in Youngstown on May 9 with seventeen members present. New officers elected for the coming year include: President William Slabodnick, Massillon City Hospital, Massillon, Ohio; Vice-President Leon Bailey, Youngstown Hospital, Youngstown, Ohio; Secretary Irene Chosy, Aultman Hospital, Canton, Ohio; and Treasurer Mrs. Willa Rinehart, Peoples Hospital, Akron, Ohio.

Included on the program was a report of the recent annual meeting of the A.S.H.P. held in Atlantic City, which was given by William Slabodnick. A group discussion of Blue Cross hospital service followed, with emphasis on drug charge routines by representatives of the member hospitals in the Akron Area Society.

At the April 28 meeting of the **Western Pennsylvania Society of Hospital Pharmacists** held at Falk Clinic, Mr. Olan Evans, Administrator of Citizens General Hospital, New Kensington, Pa., presented a talk on cooperation between the hospital pharmacist and administrator.

During the business session Mr. Robert Statler, Veterans Administration Hospital, Aspinwall, Pa., was elected delegate to attend the A.S.H.P. annual meeting representing the Western Pennsylvania Society. Sister Mary Francine gave a resume of the activities connected with Duquesne University Pharmacy School's 25th anniversary.

New officers of the **Massachusetts Society of Hospital Pharmacists** include: President Alfred Rosenberg, Beth Israel Hospital, Boston, Mass.; Vice-President Edwin W. Spear, Newton-Wellesley Hospital, Newton Lower Falls, Newton, Mass.; Treasurer Sister M. Edward, St. Vincent Hospital, Worcester, Mass.; and Secretary Ida Guber, The Faulkner Hospital, Jamaica Plain, Boston, Mass.

Twenty-two members and guests were present at the March meeting of the **Cleveland Society of Hospital Pharmacists** held at the McKesson and Robbins Wholesale House. Mr. Nelson Schroeder discussed the many phases for handling drugs and drug orders on a wholesale level, pointing out some of the interesting methods they have worked out in dealing with their problems.

During the business session, an announcement was made that the Akron Area Society of Hospital Pharmacists had invited the Cleveland Society for a joint meeting on April 12.

POSITIONS IN HOSPITAL PHARMACY

POSITIONS OPEN

FLORIDA . . . 560 bed County Hospital. Desire a pharmacist who has had hospital experience. Incumbent must be registered in the state of Florida. Address inquiries to Mr. Herman M. Hoff, Personnel Director, Jackson Memorial Hospital, Miami 36, Fla.

MASSACHUSETTS . . . Chief pharmacist wanted for 400 bed hospital in large New England city, especially one qualified to undertake reorganization program in the pharmacy. Excellent salary. State qualification of experience, internship, and educational background in letter addressed to Division of Hospital Pharmacy, 2215 Constitution Avenue, N.W., Washington, D.C.

PENNSYLVANIA . . . Newly constructed 300 bed hospital offers excellent opportunity for two pharmacists, one as chief pharmacist and the other as assistant pharmacist. Location near Philadelphia, Pa. Address inquiries to Division of Hospital Pharmacy, 2215 Constitution Avenue, N.W., Washington, D.C.

OHIO . . . Pharmacist-administrator wanted for 65-bed hospital. Excellent salary. Address letter of application to Division of Hospital Pharmacy, 2215 Constitution Avenue, N.W., Washington 7, D.C.

TEXAS . . . Opening for hospital pharmacist at San Jacinto Memorial Hospital, Baytown, Texas. Small hospital averaging thirty-five to forty patients per day. Woman preferred and would like someone who has had experience in hospital pharmacy. For additional information write to Miss Louise Wilkonson, Administrator.

OHIO . . . A pharmacist, or preferably a pharmacist-laboratory technician, position open at Athens State Hospital, Athens, Ohio. For further information write Dr. C. H. Creed, Superintendent.

The following opening in hospital pharmacy appeared in the April issue of *Hospital Management*, page 132. Anyone interested in the position should write directly to the agency indicated. A fee is charged when positions are secured through the services of a personnel agency.

PHARMACIST—Head pharmacy department; nine man group long established in beautiful clinic situated in residential section of lovely rapidly expanding midwest city 50,000. Woodward Medical Personnel Bureau, 185 North Wabash Ave., Chicago, Ill.

WASHINGTON, D.C. . . . Position open at hospital in area of Washington, D.C. One who has had internship or previous training in hospital pharmacy preferred. Salary open. For further information write to the Division of Hospital Pharmacy, (PO-2), 2215 Constitution Avenue, N.W., Washington, D.C.

POSITIONS WANTED

I DESIRE A POSITION in hospital pharmacy in the Pacific Northwest. Am a graduate of the Idaho State College of Pharmacy and hold a Bachelor of Science degree in Pharmacy. Have nine years experience as a registered pharmacist. The last four years I worked in St. Luke's Hospital Pharmacy in Cleveland, Ohio, where I was assistant chief pharmacist when I left. The reason for leaving was that I wished to be closer to my family. For further information write to Alma Robertson, 2510 E. 7th, Vancouver, Washington.



MISS DOLORES A. KAPUSTA of Campbell, Ohio, is one of two interns who will complete the two-year graduate-study—internship at the Johns Hopkins Hospital in cooperation with the University of Maryland this June. She obtained her Bachelor of Science degree from Ohio State University in 1948. Prior

to her registration in Ohio, her experience included hospital and retail pharmacy. "Stability of Quinidine Lactate" is the subject of her research.

She is a member of Phi Rho Alpha, Alpha Lambda Delta, Kappa Epsilon, Rho Chi, American Pharmaceutical Association and the American Society of Hospital Pharmacists.

A POSITION IN HOSPITAL PHARMACY by a registered pharmacist (graduate of Massachusetts College of Pharmacy, class of 1938, B.S. in pharmacy) with twelve years experience in various fields of pharmacy, including hospital, retail, and pharmaceutical laboratory. Would prefer position to be in greater Boston or vicinity. Have worked in pharmacies of hospitals ranging in size from 350–1250 beds. Available within 30 days. For further information kindly write to P. O. Box 37, Lynnfield Center, Massachusetts.

NEW MEMBERS

May 15, 1950

ARIZONA

Riddle, Harry R., 2902 Cushman Drive, Tucson
West, Rextell S., 362 N. 3rd Ave., Phoenix

CALIFORNIA

Bertrand, Charles J., 45 Montecito, San Francisco
Chilgren, Edward A., 1430 32nd Ave., San Francisco
Hermann, Siegmundt A., Box 119, Vet. Adm. Branch, Los Angeles
Morell, Frank, 2021 Chapala, Santa Barbara
Otto, Fern C., 732 N. Harvard, Los Angeles
Wong, Stanley W., 229 9th St., Oakland

COLORADO

Rowland, Fagan F., 209 S. Nevada, Colorado Springs

CONNECTICUT

Sister Maria Lucia, The Hospital of St. Raphael, 1450 Chapel St., New Haven
Walker, Clifford C., Bethel Rd., Newton (A)

FLORIDA

Lord, Clifton F., Jr., Army Air Base, Trailervet No. 3, Lot 16, Gainesville

GEORGIA

Coussons, William T., Martinez

ILLINOIS

Dickmann, Quentin J., 1041 College Ave., Alton
Ritzlin, Philip, 3932 Wilcox, Chicago 24
Sister Mary Kateri, 421 N. Lake St., Aurora
Sister Rosella Knepler, St. Johns Hospital, Springfield

INDIANA

Kovas, Dolores M., 920 N. Leland, South Bend

IOWA

Burleson, Harold H., 1524 4th Ave. N., Fort Dodge

MARYLAND

Greenberg, Mrs. Shirley G., 3754 Columbus Drive, Baltimore
Kapusta, Dolores A., Johns Hopkins Hospital, Baltimore
Pope, Louise M., Pharmacy, The Johns Hopkins Hospital, Baltimore
Trygstad, Vernon O., 2112 Dexter Ave., Silver Spring

MASSACHUSETTS

Martin, Edward B. J., 135 Washington St., Brighton
Scofield, Milton E., 31 Harrison, Melrose 76 (A)
Whittaker, John B., 78 Bromfield St., Lawrence

MICHIGAN

Bertz, William F., Box 272, Ann Arbor
Gibson, Arthur J., University of Mich. Health Service, Ann Arbor
McClarty, Raymond D., 1383 Cadillac, Detroit
Parker, Mrs. Muriel E., 2347 Fernwood, Pittsfield Vill., Ann Arbor
Paul, William E., 216 E. Drayton, Ferndale (A)

MINNESOTA

Berscheid, James B., 3241 21st Ave. S., Minneapolis
Heideman, Beryl, 1418 E. Superior, Duluth

MISSOURI

Horne, George V., 2441 Pocahontas, Rock Hill

NEW HAMPSHIRE

Bolos, Nicholas G., 19 School St., Woodsville (A)

NEW JERSEY

De Cerchio, Rudolph, 232 E. Homestead Ave., Collingswood

NEW YORK

Downes, Eleanor M., 70 S. Manning Blvd., Albany (A)
Heeder, Caryl E., 240 Hudson Ave., Hampton Manor, Rensselaer
Kay, Samuel, Vet. Adm. Hospital, Canandaigua
Loro, Joseph R., 2763 Aqueduct Rd., Schenectady
Samuels, Charlotte, 1749 Grand Concourse, Bronx
Spanbauer, Leonard E., 1100 State St., Schenectady
Taiber, Edwin E., 818 Monroe St., W. Hempstead

OHIO

Bandy, Edwin H. L., 440 Lindenwood Rd., Dayton
Bohrer, Edwin W., 1078 Oakwood, Toledo
Levy, Elvera M., 1236 Dewey Ave., Cincinnati
Oscar, Stephen W., 11222 Plymouth, Cleveland
Wargell, Walter F., 2835 E. 132nd, Apt. No. 11, Shaker Hts. (A)

PENNSYLVANIA

Goldblum, Norman P., 7564 Sherwood Rd., Philadelphia (A)
Lester, William F., 7211 Barnard, Philadelphia
Martin, Dr. Eric W., 4400 Spruce St., Apt. E-25, Philadelphia (A)
Sister Mary Elisea Lawrence, St. Joseph's Hospital, Lancaster

TENNESSEE

Bass, Joe K., 3530 Talahi Drive, Knoxville
Kennedy, Otis K., 516 Pennsylvania Ave., Oak Ridge
Stewart, Harry D., 409 Kesterwood Rd., Knoxville

WASHINGTON

Huffman, Elwood C., 117 2nd, Coulee Dam (A)

WEST VIRGINIA

Pollard, S. J., Simpson

WISCONSIN

Flynn, Wilbur E., 1572 Cass St., Green Bay

CANADA

Sister Mary Murphy, Hotel Dieu Hospital, Kingston, Ontario

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Ramirez, Dr. Jaime, Hospital Vicente D'Antoni, La Ceiba, Honduras, C.A.

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BALTIMORE-1, MARYLAND

American Society of Hospital Pharmacists

OFFICERS AND COMMITTEES 1950-1951

OFFICERS: *President*, I. Thomas Reamer, Duke University Hospital, Durham, N.C.; *Vice-President*, Grover C. Bowles, Strong Memorial Hospital, Rochester, N.Y.; *Secretary*, Gloria Niemeyer, 2215 Constitution Ave., N.W., Washington, D.C.; *Treasurer*, Sister M. Jeanette, Mary Immaculate Hospital, Jamaica, N.Y.

STANDING COMMITTEES

COMMITTEE ON MEMBERSHIP AND ORGANIZATION: Grover C. Bowles, *Chairman*, Strong Memorial Hospital, Rochester, N.Y.; Allen V. R. Beck, Indiana University Medical Center, Indianapolis, Ind.; Johnnie Crotwell, Druid City Hospital, Tuscaloosa, Ala.; Charles Hagan, Santa Monica Hospital, Santa Monica, Calif.; Phyllis Platz, University of Nebraska Dispensary, Lincoln; Adela Schneider, Southern Pacific Hospital, Houston, Texas; Sr. M. Raphael, 624 Jones St., Sioux City, Iowa.

COMMITTEE ON MINIMUM STANDARDS: Sister Mary Etheldreda *Chairman*, St. Mary's Hospital, Brooklyn; W. Paul Briggs, Department of Navy, Washington, D.C.; W. Arthur Purdum, Johns Hopkins Hospital, Baltimore, Md.

CONVENTION COMMITTEE: William Slabodnick, *Chairman*, Massillon City Hospital, Massillon, Ohio; Roberta Dodds, Swedish Hospital, Seattle, Washington; Dean Friesner, Miami Valley Hospital, Dayton, Ohio; Elizabeth Lynch, Jewish Hospital, Cincinnati, Ohio; Lillian Price, Emory University Hospital, Emory University, Ga.; John Edwin Smith, Royal Jubilee Hospital, Victoria, B.C., Canada.

COMMITTEE ON PHARMACISTS IN GOVERNMENT SERVICE: Milton Skolaut, *Chairman*, U. S. Marine Hospital, Staten Island, N.Y.; Robert Statler, V.A. Hospital, Aspinwall, Pa.; Lt. R. L. Thompson, U.S.N. Hospital, Oakland, Calif.

SPECIAL COMMITTEES

COMMITTEE ON EDUCATION: Herbert L. Flack, *Chairman*, Jefferson Medical College Hospital, Philadelphia, Pa.; Charles Schwartz, Veterans Administration, Washington, D.C.; Leo Godley, Bronson Methodist Hospital, Kalamazoo, Mich.; Evelyn Gray Scott, St. Luke's Hospital, Cleveland, Ohio; Charles Towne, Veterans Administration, Los Angeles, Calif.

COMMITTEE ON NARCOTIC REGULATIONS: Arthur W. Dodds, *Chairman*, Lynn Hospital, Lynn, Mass.; Joseph Barry, Memorial Hospital, Worcester, Mass.; Carl Brown, U.S. Public Health Service Hospital, Lexington, Ky.; Jack Kirkland, Grady Hospital, Atlanta, Ga.; Eli Schlossberg, Arizona State Hospital, Phoenix, Ariz.; Sister Mary Bernice, St. Mary's Hospital, St. Louis, Mo.

COMMITTEE ON PARENTERALS CONTAINERS: George L. Phillips, *Chairman*, University Hospital, Ann Arbor, Mich.; Norman Baker, The New York Hospital, New York, N.Y.; Mary Asquith, St. Mary's Hospital, Kitchener, Ontario, Canada; Frank J. Gregorek, Johns Hopkins Hospital, Baltimore, Md.; Walter F. Hitzelberger, Los Angeles County Hospital, Los Angeles, Calif.

A.S.H.P. REPRESENTATIVES ON POLICY COMMITTEE, DIVISION OF HOSPITAL PHARMACY: I. Thomas Reamer, (A.S.H.P. President); Don E. Francke, (Editor of THE BULLETIN); Herbert L. Flack (appointed by President); W. Arthur Purdum, (appointed by President).

PUBLICATIONS COMMITTEE: W. Arthur Purdum, *Chairman*, Johns Hopkins Hospital, Baltimore, Md.; Don E. Francke, University Hospital, Ann Arbor, Mich.; Walter Frazier, Springfield City Hospital, Springfield, Ohio; Sister Mary Junilla, Queen of Angel's Hospital, Los Angeles, Calif.; Gloria Niemeyer, American Pharmaceutical Association, Washington, D.C.

DIVISION OF HOSPITAL PHARMACY

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